Nebraska State Immunization Information System

HL7 – 2.4 & Real-time Transfer Specification

GTS Version 8.0.1

Release Date: October 13, 2016

Contents

Nebraska State Immunization Information System

HL7 – 2.4 & Real-time Transfer Specification

Introduction

The Nebraska State Immunization Information System (NESIIS) has made available an interactive user interface on the World Wide Web for authorized users to enter, query and update client immunization records. The Web interface makes NESIIS information and functions available on desktops around the state. However, some immunization providers already store and process similar data in their own information systems and may wish to keep using those systems while also participating in the statewide central repository. Others may have different billing needs and may decide they don't want to enter data into two diverse systems. NESIIS has been enhanced to accept HL7 Version 2.4 for batch loads to submit client and immunization information to the NESIIS. NESIIS has also allows providers to submit client and immunization information using HL7 2.4 formatted VXQ^V01 Message (Query for Vaccination Record) and a VXU^V04 Message (Unsolicited Vaccination Update) and receive from NESIIS the resulting HL7 2.4 Response Message in real time. Specifications for HL7 2.4 Real-time start on page 16.

The Health Level Seven (HL7) Standard

The ANSI HL7 standard is widely used for data exchange in the health care industry. The full standard is quite lengthy, covering a variety of situations in patient care and health care finance and no single application is likely to use all of its content. The CDC has worked with HL7 developers to create a set of messages that permit exchange of immunization data. This document covers the subset of HL7 that will be used for client and immunization records exchanged between NESIIS and outside systems.

- The basic unit transmitted in an HL7 implementation is the **message**.
- Messages are made up of several **segments**, each of which is one line of text, beginning with a three-letter code identifying the segment type.
- Segments are in turn made up of several **fields** separated by a delimiter character, "|".

```
MSH|^~\&|VALSYS|VALCLIN|NESIIS|NESIIS|19991005032342||VXU^V04|682299|P^|2.4^^|||ER
PID|||79928^^^^PI||SMITH^MARY^T|JOHNSON|19951212|F||||
RXA|0|999|19970903|19970903|01^DTP^CVX^^^|0.5
```

The details of how HL7 messages are put together, for NESIIS purposes, will be explained later in this document. The example above shows the essentials of what a message looks like. In this example, a message is being sent on behalf of Valley Clinic to NESIIS. The message consists of three segments. NOTE: Valley Clinic may or may not be the actual transmitter of the message. The transmitter of the message will be identified by NESIIS from log-in information and not from an HL7 message.

- The Message Header segment (**MSH**) identifies the owner **VALLEY CLINIC** (VALCLIN) of the information being sent and the receiver (**NESIIS**). It also identifies the message as being of type **VXU.** The VXU is an Unsolicited Vaccination Record Update, which is one of the message types defined by HL7.
- The Patient Identification segment (**PID**) gives the client's name (MARY T SMITH), birth date (19951212, in YYYYMMDD format), and other identifying fields.
- The Pharmacy Administration segment (**RXA**) tells that a DTP vaccine, with CVX code 01, was administered on September 3, 1997 (formatted as 19970903). Many fields are optional and this example may have more information included in it. Some segments can be repeated within a single message. In this example, the message could have included a second RXA segment to record another immunization given.

HL7 does not specify how messages are transmitted. It is flexible enough to be used for both real-time interaction and large batches. The standard defines file header and file trailer segments that are used when a number of messages are gathered into a batch for transmission as a file. NESIIS will use batch files of messages to communicate with outside systems.

Scope of this Document

The General Transfer Specification (GTS) documented here supports automated exchange of data between the NESIIS repository and outside systems. This allows both the client and immunization records to be available in both systems, so as to avoid the need to enter data twice. The remainder of this document specifies how HL7 file messages are constructed for the purposes of NESIIS. It does not cover the methods that are used to transmit files between the NESIIS central repository and outside systems. It covers only a small subset of the very extensive HL7 standard. Files of messages constructed from the guidelines in this document will fall within the HL7 standard, but there is a wide variety of other possible HL7 messages that are outside the scope of this document.

References

- See Version 2.2 (September 2006) of the Health Level 7 standard for a full description of all messages, segments, and fields. Information regarding HL7 is at www.hl7.org.
- The National Immunization Program within the Center for Disease Control (www.cdc.gov/nip) has published an Implementation Guide for Immunization Data with the purpose of keeping the use of HL7 for immunization data as uniform as possible.

HL7 Message Types used in NESIIS Transmissions

NESIIS uses two message types: VXU and ACK. The VXU is used for sending client data and immunizations. The ACK is used to acknowledge to the sender that a message has been received. The tables below show the segments that are used to construct each message type. Each segment is one line of text ending with the carriage return character. The carriage return is needed so that the HL7 messages are readable and printable. The messages may appear somewhat cryptic due to the scarcity of white space. (The standard has provisions for inclusion of binary data, but NESIIS will not use these features.) Square brackets [ ] enclose optional segments and curly braces {} enclose segments that can be repeated. Thus, a VXU message could contain any number of NK1 segments. The full HL7 standard allows additional segments within these message types, but they are unused by NESIIS. In order to remain compliant with HL7, their use will not result in an error, but the recipient can ignore the content of the message. The segments that are documented here are sufficient to support the principal NESIIS functions of storing data about clients and immunizations.

VXU

Unsolicited Vaccination Record Update

MSH	Message Header
PID	Patient Identification
[PD1]	Patient Additional Demographic
[{NK1}]	Next of Kin / Associated Parties
[PV1]	Patient Visit
{RXA}	Pharmacy / Treatment Administration
[RXR]	Pharmacy / Treatment Route (Only one RXR per RXA segment)
[{OBX}]	Observation/Result*

Note: When a VXU^V04 (Unsolicited Vaccination Record Update) message type is sent with no valid RXA segment, the client will be rejected per current business rules.

ACK

General Acknowledgment

MSH	Message Header
MSA	Message Acknowledgment
[ERR]	Error

The ADT is used for sending out client data without any immunizations. NESIIS will NOT accept an ADT message (unsolicited demographic update) for a new client. Therefore, it is best to include the demographic information in a VXU message whenever possible, as this message type accommodates BOTH immunization information and demographic update information. As an ADT message can be received as an outbound file, when a query is received for a client with no immunization information, below is the table of segments for an ADT message:

ADT

Update Patient Information

MSH	Message Header
PID	Patient Identification
[{NK1}]	Next of Kin / Associated Parties
[{*OBX}]	Observation/Result

*The only OBX segment that is valid within an ADT message is one that specifies a CONTRAINDICATION in the OBX-03 Value Type field. (i.e., 30945-0^Contraindication^LN)

Message Segments: Field Specifications and Usage

HL7 Segment Structure

Each segment consists of several fields that are separated by "|", which is the field separator character. The tables below define how each segment is structured and contain the following columns:

1. **SEQ** The ordinal position of the field in the segment. Since NESIIS does not use all possible fields in the HL7 standard, these are not always consecutive.
2. **LEN** Maximum length of the field
3. **DT** HL7 data type of the field. See below for definition of HL7 data types.
4. **R/M** R means required by HL7, and M means mandatory for NESIIS. Blank indicates an optional field.
5. **RP/#** Y means the field may be repeated any number of times, an integer gives the maximum number of repetitions, and a blank means no repetition is permitted.
6. **TBL#** Number of the table giving valid values for the field.
7. **ELEMENT NAME** HL7 name for the field.

- **HL7 data types.** Each field has an HL7 data type. Appendix A of this document lists and defines the HL7 data types needed for NESIIS. The elemental data types Numeric (NM) and String (ST) consist of one value, while some data types, such as Extended Person Name (XPN) are composites.
- **Delimiter characters.** Field values of composite data types consist of several components separated by the **component separator**, "^". When components are further divided into sub-components, these are separated by the **sub-component separator**, "&". Some fields are defined to permit repetition separated by the **repetition character**, "~". When these special characters need to be included within text data, their special interpretations are prevented by preceding them with the **escape character**, "\".

```
MSH|^~\&| …..
XXX|field1|component1^component2^subcomponent3.1&subcomponent3.2^component4|…..
YYY|repetition1~repetition2| …..
ZZZ|data includes escaped \|\~ special characters| …..
```

In the example above, the Message Header segment uses the field separator, "|", immediately after the "MSH" code that identifies the segment. This establishes what character serves as the field separator throughout the message. The next field, the four characters "^~\&", establishes, in order, the component separator character, the repetition character, the escape character, and the sub-component separator character that will apply throughout the message. The hypothetical "XXX" segment includes field1 with no internal structure, but the next field has several components separated by "^", and the third of these is made up of two sub-components separated by "&". The hypothetical "YYY" segment's first field permits repetition, in this example the two values "repetition1" and "repetition2". The hypothetical "ZZZ" segment's field has a text value that includes the characters "|~", and these are escaped to prevent their normal structural interpretation.

In NESIIS, sub-components, repetition and text values requiring the escape character will be rare. Components within fields are common, since names and addresses are represented this way. HL7 permits the use of other delimiters besides the recommended ones and the delimiters used in each message are given in the Message Header segment. NESIIS will always use the recommended delimiters when sending files and requires their use for files received.

Rules for Sending Systems

The following rules are used by sending systems to construct HL7 messages.

- Encode each segment in the order specified in the message format.
- Begin the segment with the 3-letter segment ID (for example RXA).
- Precede each field with the data field separator ("|").
- Use HL7 recommended encoding characters ("^~\&").
- Encode the data fields in the order given in the table defining segment structure.
- Encode the data field according to its HL7 data type format.
- Do not include any characters for fields not present in the segment. Since later fields in the segment are encoded by ordinal position, fields that are not present do not reduce the number of field separators in the segment. For example, when the second and third fields are not present, the field separators maintain the ordinal position of the fourth field: |field1|||field4
- Data fields that are present but explicitly null are represented by empty double quotes "".
- Trailing separators may optionally be omitted. For example, |field1|field2||||| is equivalent to |field1|field2, when field3 and subsequent fields are not present.

- End each segment with the segment terminator (always the carriage return character, ASCII hex 0D).

The following rules are used by receiving systems to process HL7 messages.

- Treat data segments that are expected but not present as if all data fields in the segment were not present.
- Require use of HL7 recommended Field Separator |, and Encoding characters ^~\& for encoding messages.
- Ignore any data segment that is included but not expected, rather than treating it as an error. The HL7 message types used by NESIIS may include many segments besides the ones in this document, and NESIIS ignores them. NESIIS will not send messages with segments not documented in this specification, but reserves the right to specify more segments at a later date. The rule to ignore unexpected segments facilitates this kind of change.
- Ignore data fields found but not expected within a segment.

The message segments below are needed to construct message types that are used by NESIIS. Each segment is given a brief description excerpted from the HL7 standard. The tables define what fields make up each segment. Since NESIIS does not use all the fields that HL7 defines, there are sometimes gaps in the ordinal sequence of fields. Following HL7 rules, the gaps do not diminish the number of field separators within the segment. For example, if the second and third fields in a segment are not present, their field separators remain in order to indicate that the next field present is the fourth: field1|||field4 .

ERR

The ERR segment is used to add error comments to acknowledgment messages.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	80	CM	R	Y		Error Code and Location

Field Notes:

ERR-1 A composite field with four components.

<segment ID (ST)>^<sequence (NM)>^<field position (NM)>^<field component ordinal number (NM)

The first component identifies the segment ID containing the error. The second component identifies the input file line number of the segment containing the error. The third component identifies by ordinal number the field containing the error. The fourth component identifies, by ordinal number, the field component containing the error (0 is used if not applicable). The remaining five components of the CE data type are not valued and their '^' separators are not generated. Note that error text is transmitted in field MSA-3. For example, if the NK1 segment is missing a mandatory field:

```
ERR|NK1^10^2^1
```

This error message identifies the NK1 segment occurring on line 10 of the input file whose mandatory second field (Name) is missing the mandatory 1st component (Family Name).

MSA

The MSA segment contains information sent while acknowledging another message.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	2	ID	R		0008	Acknowledgment Code
2	20	ST	R			Message Control ID
3	80	ST				Text Message

Field Notes:

MSA-1 Acknowledgement code giving receiver's response to a message. AA (Application Accept) means the message was processed normally. AE (Application Error) means an error prevented normal processing. An error message will be put in MSA-3, and for ACK messages the optional ERR segment will be included.

MSA-2 The message control ID from MSH-10 in the message being acknowledged. This allows the sending system to associate this response with the message being responded to.

MSA-3 Text of error message, used when MSA-1 does not have the normal value of AA.

MSH

The MSH segment defines the intent, source, destination and some specifics of the syntax of a message.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	1	ST	R			Field Separator
2	4	ST	R			Encoding Characters
3	180	HD				Sending Application
4	180	HD	R			Sending Facility
5	180	HD				Receiving Application
6	180	HD				Receiving Facility
7	26	TS				Date/Time Of Message
9	7	CM	R			Message Type
10	20	ST	R			Message Control ID
11	3	PT	R		0103	Processing ID
12	60	VID	R		0104	Version ID
15	2	ID	RE		0155	Accept Acknowledgment Type
16	2	ID	RE		0155	Application Acknowledgment Type

Field Notes:

MSH-1 Determines the field separator in effect for the rest of this message. NESIIS requires the HL7 recommended field separator of "|".

MSH-2 Determines the component separator, repetition separator, escape character, and sub-component separator in effect for the rest of this message. NESIIS requires the HL7 recommended values of ^~\&.

MSH-3 Name of the sending application. When sending, NESIIS will use "NESIIS" followed by the current version number of the registry. This field is an optional convenience. See MSH-4 and MSH-6 for the fields principally used to identify sender and receiver of the message.

MSH-4 Required by NESIIS. Segment identifies for whom the message is being sent (the owner of the message information). When sending, NESIIS will use "NESIIS". When the message is being sent to NESIIS and the Provider Organization owning the information is different than the organization transmitting the message, use either the NESIIS Provider ID of the Provider Organization that owns the information preceded by a component separator (e.g., ^36) or the short Provider Organization name (e.g., IRPH.) This value is required for inventory deduction via data exchange. Contact the NESIIS Help Desk for the appropriate organization ID and short Provider Organization name.

MSH-6 Identifies the message receiver. When sending, NESIIS will use the short Provider Organization name assigned when the provider first registers with the NESIIS database and NESIIS-Web interface.

MSH-7 Date and time the message was created. NESIIS ignores any time component. See the TS data type.

MSH-9 This is a required field. Two components of this field give the HL7 message type (see Table 0076) and the HL7 triggering event (see Table 0003). Within HL7, the triggering event is considered to be the real-world circumstance causing the message to be sent. For NESIIS purposes, this field should have the value ADT^A31 for a message conveying client information or the value VXU^V04 for a message conveying client and immunization information. In acknowledgement messages the value ACK is sufficient and the second component may be omitted.

MSH-10 This is a required field. Message rejection will result if nothing is received in this field. The message control ID is a string (which may be a number) uniquely identifying the message among all those ever sent by the sending system. It is assigned by the sending system and echoed back in the ACK message sent in response.

MSH-11 The processing ID to be used by NESIIS is **P** for production processing. If this field is null, an informational message is generated indicating that NESIIS is defaulting to **P**.

MSH-12 This is a required field. For the parser, the version number that is read in the first MSH segment, of the file, will be the version assumed for the whole file. For example, use a value of "2.3.1" to indicate HL7 Version 2.3.1or "2.4" to indicate HL7 Version 2.4. If there is no version number found in the first MSH segment, a hard error will occur and the file will not be processed.

**For NESIIS to PO providers, the Exchange Data screen will need to be set to the version number that the organization has selected, in which to receive their data files. Setting the version number "tells" the writer which HL7 version format to use when generating the file in (the default will be the most recent version).

MSH-15 This field identifies the conditions where a system must return accept acknowledgments to this message. NESIIS ignores this value from sending organizations.

MSH-16 Controls what type of acknowledgement (ACK) NESIIS generates for each message in the file submitted. If MSH-16 is submitted NESIIS is required to process the value and generate the appropriate message. If left empty, NESIIS will assume a value of ER. This forces NESIIS to only acknowledge errors, both real and informational, in the message. If populated with a value of AL, NESIIS will return full acknowledgment of every message inside the file submitted.

Note: The value provided in MSH-16 directly impacts the ability of NESIIS to analyze messages for accuracy. While NESIIS can technically accept a value of 'NE' in MSH-16, this value does not return feedback to the sending organization **and** prohibits NESIIS from properly analyzing the message for data quality. As such, it will not be an allowed value for data exchange.

PID

The PID segment is used by all applications as the primary means of communicating patient identification information. This segment contains permanent patient identifying and demographic information that, for the most part, is not likely to change frequently.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
3	20	CX	R	Y	0203	Patient ID (Internal ID)
5	48	XPN	R	Y		Patient Name
6	48	XPN		Y		Mother's Maiden Name
7	26	TS	M			Date/Time of Birth
8	1	IS			0001	Sex
10	80	CE		Y	0005	Race
11	106	XAD		Y		Patient Address
13	40	XTN				Phone number – home
19	16	ST				SSN Number – Patient
22	80	CE		Y	0189	Ethnic Group
24	1	ID			0136	Multiple Birth Indicator
25	2	NM				Birth Order
29	26	TS				Patient Death Date and Time

Field Notes:

PID-3 Sub-components 1 (ID) and 5 (identifier type code) are required in the PID-3 field. When a Provider Organization is sending to NESIIS, use the sending system's Chart Number or other identifier if available. When NESIIS is sending to an outside system it will use the client's NESIIS ID and chart number when it is available. If a Provider Organizations sends the client's NESIIS ID (use "SR" as the identifier type code) in addition to a chart number, the NESIIS ID will be used to locate the client.

PID-5 See the XPN data type. Last name and first name are required in the first two components. If the Name Type Code component is included, use L-Legal ***NOTE: If client does not have a first name,* NO FIRST NAME *must be entered.*** NESIIS does not support repetition of this field.

PID-6 See the XPN data type. In this context, where the mother's name is used for client identification, NESIIS uses only last name and first name. A mother's legal name might also appear in the context of an NK1 segment. NESIIS does not support repetition of this field.

PID-7 Give the year, month, and day of birth (YYYYMMDD). NESIIS ignores any time component.

PID-8 See Table 0001. Use F, M, or U.

PID-10 See Table 0005. NESIIS stores and writes "Unknown" values as null. NESIIS does not accept Hispanic or Latino as a race option. Submit it in the Ethnic Group PID-22. NESIIS does not support repetition of this field.

PID-11 See the XAD data type. NESIIS does not support repetition of this field. Send the patient's primary address and county of residence in this field. NESIIS will also attempt to populate city, county, and state if a Nebraska ZIP Code is sent. See User Table 0289 for a list of counties.

PID-13 See the XTN data type. Version 2.4 includes the support of the N, X, B and C sequences. NESIIS does not support repetition of this field. If PRN is specified in component 2 (telecommunication use code (ID) from table 0201) NESIIS will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, NESIIS will assume that the phone number is specified in the first component in the [NNN][(999)]999-9999[X99999][B99999][C any text] format

PID-19 NOTE: Social Security Number is used for identification purposes only, and is not displayed in screens or distributed to Provider Organizations. Support of PID-19 is for backwards compatibility only. NESIIS recommends its specification in PID-03. NOTE: NESIIS does not require inclusion of hyphens in the SSN. The following is an example of submitting the client's SSN in PID-19:

```
|158465926|
```

PID-22 See Table 0189. NESIIS stores and writes "Unknown" values as null. NESIIS supports repetition of this field.

PID-24 Use **Y** to indicate that the client was born in a multiple birth event (twins, triplets, etc.)

PID-25 Relevant when client was born in a multiple birth event (twins, triplets, etc.) Use 1 for the first born, 2 for the second, etc. This field is useful in matching client data to existing records.

PID-29 The date of death, if client is deceased. Give the year, month, and day (YYYYMMDD). NESIIS ignores any time component. If a death date is sent, then the Patient Registry Status in PD1-16 must indicate a value of "P" for permanently inactive/deceased.

PD1

The PD1 carries patient additional demographic information that is likely to change.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
11	80	CE			0215	Publicity Code
12	1	ID			0136	Protection Indicator
13	8	DT				Protection Indicator effective date
16	1	IS			0441	Immunization registry status
17	8	DT				Immunization registry status effective date
18	8	DT				Publicity Code effective date

Field Notes:

PD1-11 Controls whether recall/reminder notices are sent. NESIIS will recognize "01" to indicate no recall/reminder notices or "02" recall/reminder notices any method.

PD1-12 Controls visibility of records to other organizations. Indicates whether or not consent has been given (or assumed) for record sharing. Three values include: **Null** – patient/guardian has not yet been asked to give consent to share or has not responded, **Y** – sharing is allowed and **N**- sharing is not allowed. Note: N will be stored as Unknown.

PD1-13 Effective date for protection indicator reported in PD1-12. Format is YYYYMMDD.

PD1-16 Identifies the registry status of the patient. See table 0441.

PD1-17 Effective date for registry status reported in PD1-16. Format is YYYYMMDD.

PD1-18 Effective date for publicity code reported in PD1-11. Format is YYYYMMDD.

NK1

The NK1 segment contains information about the patient's other related parties. Any associated parties may be identified. Utilizing *NK1-1-set ID*, multiple NK1 segments can be sent to patient accounts.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	4	SI	R			Set ID - NK1
2	48	XPN		Y		Name
3	60	CE			0063	Relationship
4	106	XAD		Y		Address
5	40	XTN		Y		Phone Number

Field Notes:

NK1-1 Sequential numbers. Use "1" for the first NK1 within the message, "2" for the second, and so forth. Although this field is required by HL7, NESIIS will ignore its value, and there is no requirement that the record for the same responsible person keep the same sequence number across multiple messages, in the case that information from the same record is transmitted more than once.

NK1-2 Name of the responsible person who cares for the client. See the XPN data type. NESIIS does not support repetition of this field.

NK1-3 Relationship of the responsible person to the client. See data type CE and Table 0063 in the HL7 tables. Use the first three components of the CE data type, for example |MTH^Mother^HL70063|.

NK1-4 Responsible person's mailing address. See the XAD data type. NESIIS does not support repetition of this field. Note: **The patient's primary address should be sent in PID-11.**

NK1-5 Responsible person's phone number. NESIIS does not support repetition of this field. If PRN is specified in component 2 (telecommunication use code (ID) from table 0201) NESIIS will use the 6th 7th 8th and 9th components for specification of area code, phone number, extension and text, respectively. Otherwise, NESIIS will assume that the phone number is specified in the first component in the [NNN] [(999)]999-9999[X99999][B99999][C any text] format. The patient's primary phone number should be sent in PID-13.

PV1

The PV1 segment is used to send visit-specific information.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
2	1	IS	R		0004	Patient Class
20	50	FC	M	Y	0064	Financial Class

Field Notes:

PV1-2 See table 0004. NESIIS will store and write a value of "R" (recurring patient) for this field.

PV1-20 See table 0064. This field has been replaced with OBX-5.

RXA

The RXA carries pharmacy administration data. It is a repeating segment and can record unlimited numbers of vaccinations.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	4	NM	R			Give Sub-ID Counter
2	4	NM	R			Administration Sub-ID Counter
3	26	TS	R			Date/Time Start of Administration
4	26	TS	R			Date/Time End of Administration
5	100	CE	R			Administered Code
6	20	NM	R			Administered Amount
9	200	CE		Y	NIP001	Administration Notes
10	200	XCN	RE	Y		Administering Provider
11	200	CM				Administered-at location
15	20	ST		Y		Substance Lot Number
17	60	CE		Y	0227	Substance Manufacturer Name
18	200	CE		Y	NIP002	Substance Refusal Reason
20	2	ID		Y	0322	Completion Status
21	2	ID		Y	0323	Action code - RXA

Field Notes:

RXA-1 Required by HL7. Use "0" for NESIIS.

RXA-2 Required by HL7. For PO-NESIIS loads, Data Exchange expects incoming values of 999 for this field. Other numeric values are ignored.

NESIIS Data Exchange sends out series information in this field, provided the system is configured to do so. For example, if a dose evaluates to (3 of 4) in the Immunization Evaluator, then the system sends the number 3 in RXA-2. If the dose violates a specific Immunization Evaluator rule, then the system sends 777 in RXA-2. In all other cases, the number 999 is sent in RXA-2. For combination vaccines, 999 is always sent in RXA-2, and the series count for each component antigen in the combination vaccine is sent in grouped OBX segments, which follow the RXA segment. Please see the field notes on OBX-3, OBX-4 and OBX-5.

The ability to send series information in RXA-2 only applies to HL7 Version 2.4. It applies to Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract. Some configuration is needed to send series information in RXA-2. On the Manage Data Exchange Screen, the **Send HL7 Series/Recommend** option displays, and the user must select either "Series Only" or "Both" from the pick list. (This option is hidden if Flat File or HL7 PO-NESIIS is chosen.)

The Send Series/Recommend option also displays on the Organization Extract Screen when the user chooses the HL7 2.4 Transaction Format.

If the user configures the system so that it will **not** send series information, then the system always sends 999 RXA-2.

In the following example, the dose of Encephalitis is the 3rd dose in the series.

```
RXA|0|3|20010207|20010207|39^Japanese encephalitis^CVX^90735^Japanese
      encephalitis^CPT|1.0|||01^^^^^~32851911^NESIIS immunization
      id^IMM_ID^^^||||||||||
```

RXA-3 Date the vaccine was given. NESIIS ignores any time component.

RXA-4 Required by HL7. Ignored by NESIIS, which will use the value in RXA-3.

RXA-5 This field identifies the medical substance administered. If the substance administered is a vaccine, NESIIS prefers National Drug Code (NDC) codes or CVX codes, although other coding systems are accepted (CPT-4 code, Vaccine Trade Name, or Vaccine Group Code) for the vaccine administered. NDC code is required for organizations deducting from inventory via data exchange. If submitting one data element for the vaccine administered, place the code itself in the first component of the triplet, description in the second component of the triplet and coding system in the third component of the triplet. Here's an example of a single CVX code submission for an administered vaccine, |20^DTaP^CVX^^^|. If submitting more than one data element for the vaccine administered, use triplet components four through six. For example, if NDC code was submitted in addition to CVX code, use the fourth component of the triplet for the code itself, fifth component of the triplet for description and "NDC" in the sixth component of the triplet, `|20^DTaP^CVX^58160-0810-43^10 pack-1 dose vials^NDC|`. (NOTE: Use hyphens when reporting NDC code). If using CPT code, use "CPT" as the name of the coding system. See the CE data type and HL7 - Table 0292 (CVX Codes), and NESIIS – Table WCPT (CPT Codes).

The following is an example of the correct formatting for the RXA-5 segment:

```
RXA|0|1|20050919|20050919|10^IPOL^CVX^49281-0860-10^10 dose vial^NDC
```

RXA-6 Dose Magnitude is the number of age appropriate doses administered. For example, a dose magnitude of 2 of a pediatric formulation would be adequate for an adult. NESIIS and HL7 require this field to contain a value. However, a value of 1.0 will be stored in its place.

RXA-7 For specific Vaccine Trade Names, Dosage Type may indicate the unit type for an administered vaccine. For example, mL, MCG, IU or CAPS. (*See New Deduct From Inventory section)*

RXA-9 NESIIS will recognize 00 to indicate a new administered vaccine or 01 to indicate Historical Record. . When sending, NESIIS will include the corresponding immunization id in the second repeating segment. Note: Historical Record vaccines will not apply an inventory deduction for the vaccine lot.

|01^^^^^~9999999^NESIIS immunization id^IMM_ID^^^|

RXA-10 Identifies the name of the administering clinician (VEI), ordering authority (OEI), and recorder (REI) of the immunization in NESIIS. NESIIS will return the Administering Provider only if the submitted data is appropriately formatted and is owned by the provider requesting the data. NESIIS will use components 2 – 7 to record the names.

```
|^SMITH^SALLY^S^^^^^^^^^VEI~^O'BRIAN^ROBERT^A^^DR^MD^^^^^^OEI~^THOMAS^KEVIN^R^^^^^^^
^^REI|
```

.

RXA-11 NESIIS will use this field to identify the facility where the vaccine was administered. Place the facility name in component 4.

RXA-15 Manufacturer's lot number for the vaccine. NESIIS does not support repetition of this field.

RXA-17 Vaccine manufacturer from Table 0227, for example |AB^Abbott^ MVX^^^|. The HL7 2.4 specification recommends use of the external code set MVX. "When using this code system to identify vaccines, the coding system component of the CE field should be valued as "MVX" not as "HL70227." NESIIS does not support repetition of this field.

RXA-18 When applicable, this field records the reason the patient refused the vaccine. See table NIP002. Any entry in this field indicates that the patient did not take the substance. The vaccine that was offered should be recorded in RXA-5, with the number 0 recorded for the dose number in RXA-2. Do not record contraindications, immunities or reactions in this field. NESIIS does not support repetition of this field.

Notes on Refusals:

a) NESIIS only stores the fact that a refusal of a vaccine occurred, not a specific type of refusal, so all outgoing refusals will be designated as "PARENTAL REFUSAL." Please see the example below.

b) The NESIIS system will not write out refusals which do not have an "applies-to" date. It will write out multiple refusals for the same vaccine on different dates for those clients who have them.

c) The NESIIS system will accept incoming refusals of the same vaccine on different dates and file them both. However, if they both have the same applies-to date, then only one will be stored.

d) The sending organization will become the refusal owner. In general, only the organization who owns the refusal is permitted to edit it. However, in the case of parent and child organizations, the parent may edit the child's refusals and vice versa.

Here is a sample RXA segment for an MMR refusal given on the date 01/01/2007:

```
RXA|0|0|20070101|20070101|^^^00006-4681-00^10 pack-1 dose vials^NDC |1.0|
||||||||||||00^PARENTAL REFUSAL^NIP002^^^
```

RXA-20 For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, this field records the value PA for doses which are partially administered. A partially administered dose refers to the scenario where the patient jumps and the needle breaks, resulting in an unknown quantity of vaccine entering the patient's system.

RXA-21 Action Code.

Allows an organization to add to or delete records. If it is left empty, then NESIIS default to "A" for additions. To delete an existing immunization in NESIIS, specify a value of "D". The immunization can only be deleted if is owned by the same organization requesting the delete, No more than 5% of all incoming immunizations in a batch load file can be flagged as delete requests. The total number of delete requests in a single file cannot exceed 50 total.

Note: For updates and additions, organizations shall use "A" additions in RXA-21, NESIIS determines whether to update the record or add a new immunization.

Here is a sample RXA segment for an update and addition immunization:

```
RXA|0|1|20050919|20050919|10^IPOL^CVX^49281-0860-10^10 dose vial^NDC
|1.0|||01^Historical^^^^^^^^^|||||||||||A|
```

RXR

The Pharmacy/Treatment Route Segment contains the alternative combination of route and site.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	60	CE	R		0162	Route
2	60	CE			0163	Site

Field Notes:

RXR-1 This is the route of administration from table 0162 or NCIT code.

RXR-2 This is the site of the route of administration from table 0163.

OBX

The Observation/Result Segment is used to transmit an observation.

SEQ	LEN	DT	R/M	RP/#	TBL#	ELEMENT NAME
1	4	SI				Set ID-OBX
2	3	ID				Value type
3	80	CE	R			Observation Identifier
4	20	ST				Observation sub-ID
5	65536	-	M			Observation Value
11	1	ID	R		0085	Observation Result Status
14	26	TS				Date/Time of the observation

Field Notes:

OBX-1 Sequential numbers. Use "1" for the first OBX within the message, "2" for the second, and so forth.

OBX-2 This field contains the data type which defines the format of the observation value in OBX-5. For incoming PO-NESIIS data, Data Exchange accepts CE for Coded Entry. However, for NESIIS-PO, the system will send out values of CE, TS, and NM for Coded Entry, Timestamp, and Number respectively, depending on what is actually sent in OBX-5.

OBX-3 This field contains the observation's unique identifier. Organizations send Logical Identifier Name and LOINC Codes. The Name of Coding System in the third component must be LN for LOINC, First component and second component must report the following:

- **30945-0 Vaccination Contraindication/Precaution/Immunity**, use 30945-0 in this field and enter a Contraindication, Precaution, or Immunity code (NIP004) in OBX-5.

  This example demonstrates how to report the decision not to administer an immunization when the patient has a contraindication:
  `OBX|1|CE|30945-0^Contraindication^LN||21^acute illness^NIP^^^|||||F|`
  This example demonstrates how to report the decision not to administer an immunization when the patient shows evidence of immunity:
  `OBX|1|CE|30945-0^Immunity^LN||24^History of Diphtheria Infection^NIP^^^|||||F|`

- **31044-1 Reaction to Immunization**, use 31044-1 in this field and enter a Reaction code (NESIIS001) in OBX-5.
  Example: `OBX|1|CE|31044-1^Reaction^LN||HYPOTON^hypotonic^NESIIS^^^|||||F|`

- **30948-4 Vaccination Adverse Event Outcome**, use 30948-4 in this field and enter an Event Consequence code (NIP005) in OBX-5.
  Example: `OBX|1|CE|30948-4^Adverse Outcome^LN||E^er room^NIP^^^|||||F|`

- **64994-7 VFC Eligibility to Immunization**, use 64994-7 in this field and enter a VFC Eligibility code (from the HL7 0064 table for Financial Class) in OBX-5.
  Note: If using a Nebraska-specific code (NE01-04), use NESIIS in OBX-5.3.
  Example:
  RXA|0|999|20061017|20061017|51^HepB-Hib^CVX^^^|0|||00^^^^^||||||||||||
  OBX|1|CE|64994-7^Vaccine Elig Code^LN^^^||V05^Underinsured^HL70064|||||F|
  OBX|1|CE|64994-7^Vaccine Elig Code^LN^^^||NE03^Not VFC Eligible – Uninsured (Adult)^**NESIIS**|||||F|

- **30963-3 Vaccine Funding Source to Immunization**, use 30963-3 in this field and enter a Vaccine Funding Source code (from the NIP008 table) in OBX-5.
  Example:
  RXA|0|999|20061017|20061017|51^HepB-Hib^CVX^^^|0|||00^^^^^||||||||||||
  OBX|1|CE|30963-3^Vaccine purchased with^LN^^^||PBF^Public Funds^NIP008|||||F|

For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, the system uses this field to send the LOINC Codes for **Series information** for combination vaccines. For each component of a combination vaccine, the system sends out a grouped set of two OBX segments. The first segment identifies the component antigen, and the second segment identifies the Series count. OBX-3 is used to identify whether the component antigen or the valid series count is noted in OBX-5 respectively.

Here are the LOINC Codes that the system sends in OBX-3 for Series information for combination vaccines.

LOINC Code	Description
38890-0	Component Vaccine Type. This term is used to distinguish separate vaccine components of a multiple antigen vaccine. Included in LOINC 1/2005.
38890-0&30973-2	Dose Number in Series

In the following example, the LOINC Codes are highlighted in OBX-3. These two OBX segments together express that a dose of combination vaccine counts for the 1st dose of DTaP in the DTaP series.

OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|20^DTaP^CVX^90700^DTaP^CPT||||||F|
OBX|2|NM|38890-0&30973-2^Dose number in series^LN|1|1||||||F|

Please see the end of the OBX field notes for a complete example of how NESIIS sends Series information for combination vaccines.

For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, the system uses this field to send the LOINC Codes for **Recommendations**. For each recommendation, the system sends a grouped

set of five OBX segments. Here are the LOINC Codes that the system sends out in OBX-3 for Recommendations. The LOINC itself is sent in OBX-3 in order to identify what the value in OBX-5 represents.

LOINC Code	Description
30979-9	Vaccines Due Next
30979-9&30980-7	Date Vaccine Due
30979-9&30973-2	Vaccine due next dose number
30979-9&30981-5	Earliest date to give
30979-9&30982-3	Reason applied by forecast logic to project this vaccine

In the following example, the LOINC Codes are highlighted in OBX-3 for a single recommendation of HepB.

```
OBX|11|CE|30979-9^Vaccines Due Next^LN^^^|3|45^HepB^CVX^90731^HepB^CPT||||||F|
OBX|12|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|3|20050103||||||F|
OBX|13|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|3|1||||||F|
OBX|14|TS|30979-9&30981-5^Earliest date to give^LN^^^|3|20050103||||||F|
OBX|15|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|3|^ACIP schedule||||||F|
```

Please see the end of the OBX field notes for a complete example of how NESIIS sends Recommendations.

OBX-4 For sending out Series Information and Recommendations, the number in this field groups together related OBX segments. For example, a single recommendation for DTP/aP is sent in a grouped set of five OBX segments, all with the same sub-identifier in OBX-4. The sub-identifier will increment sequentially.

For example, NESIIS sends out five grouped OBX segments for each recommendation. The following is a single MMR recommendation, all sharing the same Observation sub-ID of 4 in OBX-4.

```
OBX|16|CE|30979-9^Vaccines Due Next^LN^^^|4|03^MMR^CVX^90707^MMR^CPT||||||F|
OBX|17|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|4|20050407||||||F|
OBX|18|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|4|2||||||F|
OBX|19|TS|30979-9&30981-5^Earliest date to give^LN^^^|4|20021105||||||F|
OBX|20|CE|30979-9&30982-3^Reason applied by forecast logic to project this
       vaccine^LN^^^|4|^ACIP schedule||||||F|
```

OBX-5 Text reporting Contraindication, Precaution, or Immunity (NIP004), Reaction (NESIIS001), Event Consequence (NIP005), Vaccine Funding Source (NIP008) or VFC Eligibility (HL70064) NESIIS has imposed a CE data type upon this field. The first component of which is required.
(e.g., `|PERTCONT^Pertussis contra^NESIIS^^^|`)

For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, this field holds the value observed for series information and recommendations. The value corresponds to the LOINC in OBX-3. For example, for recommendations, the fourth OBX segment is for the earliest date. OBX-3 contains the code 30979-9&30981-5 and OBX-5 contains the actual earliest date as follows:

```
OBX|4|TS|30979-9&30981-5^Earliest date to give^LN^^^|1|20010519||||||F|
```

Please see the end of the OBX field notes for complete examples of how NESIIS sends Series for combination vaccines and Recommendations.

OBX-11 Required for HL7. Use “F” for NESIIS.
OBX-14 Records the time of the observation. NESIIS ignores any time component.

NOTE 1: The only valid OBX Observation Identifier (OBX-03) for an **ADT^A31** message type is Contraindication/Precaution (30945-0).
NOTE 2: All OBX messages with an observation identifier of Vaccination Contraindication/Precaution will be returned in an outgoing file in a separate ADT message for the client.
NOTE 3: Complete Example of NESIIS’s use of OBX to send Series Information for Combination Vaccines

A single dose of combination vaccine may have a different series dose count for each component. For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, the system sends a grouped set of three OBX segments for each component in a combination vaccine. For example, a single dose of DTaP-Hib is sent as below. The first three OBX segments express the dose count of 1 for DTaP. The last three OBX segments express the dose count of 3 for Hib.

```
RXA|0|999|19810807|19810807|50^DtaP-Hib^CVX^33333-0990-55^10 pack-1 dose vials^NDC
|1.0|||01^^^^^~32851914^NESIIS immunization id^IMM_ID^^^||||||||||
OBX|1|CE|38890-0^COMPONENT VACCINE TYPE^LN|1|20^DTaP^CVX^90700^DTaP^CPT||||||F|
OBX|2|TS|38890-0&29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN|1|20010730||||||F|
OBX|3|NM|38890-0&30973-2^Dose number in series^LN|1|1||||||F|
OBX|4|CE|38890-0^COMPONENT VACCINE TYPE^LN|2|17^Hib^CVX^90737^Hib^CPT||||||F|
OBX|5|TS|38890-0&29768-9^DATE VACCINE INFORMATION STATEMENT PUBLISHED^LN|2|19981216||||||F|
OBX|6|NM|38890-0&30973-2^Dose number in series^LN|2|3||||||F|
```

NOTE 4: Complete Example of NESIIS's use of OBX to send Recommendation Information

For Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract, a single recommendation is sent in a grouped set of five OBX-segments, which follow a place-holder RXA segment that does not represent any actual immunization administered to the client. The five OBX segments in order express the Vaccine of the recommendation, the recommended date, the dose of the next vaccine due, the earliest date to give, and the reason for the recommendation, which is always the ACIP schedule.

```
RXA|0|0|20010407|20010407|998^No Vaccine Administered^CVX|999|0
OBX|1|CE|30979-9^Vaccines Due Next^LN^^^|1|20^DTP/aP^CVX^90700^DTP/aP^CPT||||||F|
OBX|2|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|1|20010607||||||F|
OBX|3|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|1|1||||||F|
OBX|4|TS|30979-9&30981-5^Earliest date to give^LN^^^|1|20010519||||||F|
OBX|5|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|1|^ACIP schedule||||||F|
OBX|6|CE|30979-9^Vaccines Due Next^LN^^^|2|85^HepA^CVX^90730^HepA^CPT||||||F|
OBX|7|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|2|20030407||||||F|
OBX|8|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|2|1||||||F|
OBX|9|TS|30979-9&30981-5^Earliest date to give^LN^^^|2|20020407||||||F|
OBX|10|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|2|^ACIP schedule||||||F|
OBX|11|CE|30979-9^Vaccines Due Next^LN^^^|3|45^HepB^CVX^90731^HepB^CPT||||||F|
OBX|12|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|3|20010407||||||F|
OBX|13|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|3|1||||||F|
OBX|14|TS|30979-9&30981-5^Earliest date to give^LN^^^|3|20010407||||||F|
OBX|15|CE|30979-9&30982-3^Reason applied by forecast logic to project this
vaccine^LN^^^|3|^ACIP schedule||||||F|
```

The ability to send Recommendations in these grouped OBX segments only applies to HL7 Version 2.4. It applies to Batch HL7 NESIIS-PO, Batch HL7 Bi-directional, Real-time HL7, and Organizational Extract. Some configuration is needed to send Recommendations in this way. On the Manage Data Exchange Screen, the **Send HL7 Series/Recommend** option displays, and the user must select either "Recommendations Only" or "Both" from the pick list. (This option is hidden if Flat File or HL7 PO-NESIIS is chosen.)

The Send Series/Recommend option also displays on the Organization Extract Screen when the user chooses the HL7 2.4 Transaction Format.

If the user configures the system so that it will **not** send recommendations, then the system will omit sending the grouped set of five OBX segments entirely.

Deduct From Inventory

We are pleased to announce that NESIIS now has the ability to "Deduct from Inventory." This means data exchange organizations can effectively use the NESIIS Inventory Module in conjunction with their routine data exchange submissions. "Deduct from Inventory" functionality also provides the ability to send new dosage types and quantities for specific vaccine trade names.

Here's how it works:

1. Organizations must establish their NESIIS Inventory Module. This is a manual process that requires vaccine lot numbers to be created and saved in the User Interface. Data captured during this process includes: Trade Name, Manufacturer, NDC, Lot Number, Expiration Date, Dose Size and Funding Source.

2. Organizations submit their HL7 files to NESIIS using their approved submission method. NESIIS will process these files and attempt to match 'new' immunizations to your organization's existing inventory data in NESIIS. If NESIIS is able to find an exact lot number match (using lot number, administration code, and funding source or VFC funding eligibility), it will decrement the Quantity on Hand for that lot number.

   Note: National Drug Code (NDC) is the required type for administration code in the RXA-5 field when deducting from inventory. In addition to NDC, RXA-5 can also include CVX, for DFI matching.

3. New Dosage Types are now accepted by NESIIS for specific Vaccine Trade Names. These new types are: MCG (Micrograms), IU (International Units) and CAPS (Capsule). These new types, and their accompanying quantities, are used in conjunction with specific Vaccine Trade Names which must be included as part of the vaccine information sent when also sending a new dosage type. The new types and quantities will be converted to the equivalent NESIIS dosage amount for the vaccine indicated and deducted from the appropriate vaccine lot. If NESIIS is unable to determine the trade name from the NDC, conversion will not occur.

   Vaccine Trade Name and Dosage Type combinations accepted:

Vaccine Trade Name	Dosage Type
Recombivax Peds	MCG
Recombivax-Adult	MCG
Recombivax-Dialysis	MCG
Engerix-B Adult	MCG
Engerix-B Peds	MCG
Engerix-B Dialysis	MCG
Imovax Rabies ID	IU
Imovax Rabies IM	IU
RabAvert	IU
Adeno T4	CAPS
Adeno T7	CAPS
Adeno Virus types 4 and 7	CAPS
Vivotif	CAPS

4. If NESIIS is unable to find an exact lot number match (due to various reasons), the 'new' immunization record will be accepted and displayed in the client's immunization history. Information errors within the Response File will provide explanations of why Deduct from Inventory did not take place.

   Note: Historical immunization records do not qualify for Deduct from Inventory.

5. Data exchange organizations are not required to use Deduct from Inventory functionality. However, we strongly recommend that VFC organizations consider taking advantage of this feature. Accurate inventory quantities will ensure efficient vaccine ordering through NESIIS.

   Note: Deduct from Inventory will only function for an organization's default site. NESIIS will not check the inventory of an alternate site associated with an organization.

Highlight of Data Exchange Changes for Deduct from Inventory

Required HL7 fields for Deduct from Inventory functionality:

1. RXA-5, Administration Code. NDC is required for matching, and CVX is also accepted.

2. RXA-6 is a required field for valid dose size. Valid values for this field are: 0.1, 0.2, 0.25, 0.5, 0.65, 1.0, 2.0, and multiple of these values (1/2x, 2x, 3x, 4x, 5x). Alternate dosage sizes are also valid for new dosage types. Valid values for MCG (Micrograms) are: 5.0, 10.0, 20.0, 40.0, and multiples of these values (1/2x, 2x, 3x, 4x, 5x). Valid values for IU (International Units) are: 2.5 and multiples of this value (1/2x, 2x, 3x, 4x, 5x). Valid values for CAPS (Capsules) are: 1.0 and multiples of this value (1/2x, 2x, 3x, 4x, 5x).

3. RXA-7 is required when using alternate dosage types for specific Vaccine Trade Names. The field allows for new dosage types of: MCG (Micrograms), IU (International Units) and CAPS (Capsule).

4. RXA-15, Substance Lot Number. The incoming lot number is required. Note, Lot Number is NOT case sensitive.

5. OBX-2, Value Type. Type must be "CE."

6. OBX-3, Observation Identifier. To deduct, "30963-3^Vaccine purchased with^LN" must be used when reporting funding source, or "64994-7^Vaccine Elig Code^LN" when reporting VFC funding eligibility.

7. OBX-5, Observation Value. To deduct, "PVF^Private funds^NIP008" or "PBF^Public funds^NIP008" must be used when reporting funding source. When reporting VFC funding eligibility, values from HL7 table 0064 must be used.

File Interchange between NESIIS and Outside Systems

The central repository of NESIIS contains records of clients from around the state. Client and immunization records flow both ways between NESIIS and outside systems. Data, for a particular client, is transmitted by NESIIS to an outside system (Provider Organization) only if the client is identified as having a relationship with that Organization AND the relationship was created by transmitting the client's record to NESIIS. So, an exchange of information about a given client is always initiated by the outside system. There are three options for exchanging data with NESIIS:
(1) The Provider Organization can send data to NESIIS and request that no data is returned from NESIIS.
(2) The Provider Organization can request data from NESIIS while not providing data to NESIIS.
(3) The Provider Organization can send data to NESIIS and NESIIS will return any updated information regarding the clients that have a relationship with that Provider Organization.

Note: client and immunization data can also be entered, queried, and modified using the NESIIS-Web interface. This provides an alternate way of identifying a client as having a relationship with a Provider Organization. The use of NESIIS-Web is not required to create a relationship between a Provider Organization and a client. The first transmission to NESIIS, for a client immunization record, will create the link that will cause NESIIS to transmit that client's record to the outside system.

HL7 messages are always part of a two-way exchange between an initiating system and a responder. Sometimes the initial message implies specific data to be sent in a response. Other times, as is the case with NESIIS client and immunization data, the principal response of the receiving system is to process the message and post whatever it contains to its own database. For these cases, HL7 provides the ACK message type, which contains no new application data, but allows the receiver to inform the initiator that the message has been received and processed successfully. If an error prevents successful processing, optional parts of the ACK message will allow this to be communicated as well.

For exchanges between NESIIS and outside systems, it is the responsibility of the outside system to initiate the transfer of the first file, containing ADT and/or VXU messages with client and immunization data. After processing those messages, NESIIS responds with a file of ACK messages. At the same time or soon after, NESIIS also creates another file of ADT and VXU messages, containing the full client record, to send to the Provider Organization that initiated the first transfer. It is the responsibility of that Organization as receiver to transmit back a file of ACK messages. During this second exchange, in terms used by HL7, NESIIS is the initiator and the outside system is the respondent. However, it is the receipt of the first file initiated by the outside system that causes NESIIS to initiate sending its own data file.

	Provider Organization	**NESIIS**	
		Outgoing	**Receiving**
1.	Creates a file of client and immunization records that have changed since they were last transmitted to NESIIS.		
2.	Transmits the file to NESIIS.		
3.			Processes the file received, creates a file of ACK messages.
4.		Transmits the ACK file back to the initiator of the original file.	
5.	Processes the ACK file to confirm success of the file transmission.		
6.		Creates a file of client and immunization records that have changed since they were last transmitted to this Provider Organization.	

7.		Transmits this file to the Provider Organization.	
8.	Processes the file received, creates a file of ACK messages.		
9.	Transmits the ACK file back to NESIIS		
10.			Processes the ACK file to confirm success of the file transmission.

The 15th field, in the MSH message header segment, allows the initiator to ask that the message be acknowledged only in the case of an error and NESIIS supports this in order to minimize the number of ACK messages transmitted. In this case, the ACK file contains only error messages (an optional form of the ACK message type). The original messages, with no answering error messages, are implicitly acknowledged as successfully processed. If all messages in a batch are successful, the answering ACK file will only contain file batch headers and footers, with no actual ACK messages.

Examples

To illustrate how a NESIIS HL7 file is put together we will document how the fictional organization, Valley Clinic, formats client and immunization records to be transmitted to NESIIS. The following table displays the information to be transmitted and it is organized into HL7 segments and fields. For example, PID-3 refers to the third field in the Patient Identification segment.

Information to transmit	Data value to be entered	HL7 Format
• Client #1		PID segment
• Chart Number (ID on Valley Clinic's system)	45LR999	PID-3
• Social Security Number	444111222	PID-3
• Name	MILLER^GEORGE^M^JR	PID-5
• Mother's maiden name	OLSON^MARTHA	PID-6
• Birth date	19950227	PID-7
• Sex	M	PID-8
• Patient's Primary Address	123 MAIN ST LINCOLIN, NE 68509 NE109 (Lancaster County, NE)	PID-11
• Patient's Primary Phone Number	402 987 6543	PID-13
• Multiple Birth Indicator	Y (client was born as part of a multiple birth)	PID-24
• Birth Order	2 (second birth of a multiple birth)	PID-25
• Publicity Code	02	PD1-11
• Protection Indicator	Y (client records are visible by other provider organizations)	PD1-12
• Patient Registry Status	A (client is active in the registry)	PD1-14
• Responsible Person (parent or other contact who cares for client)		NK1 segment
• Name	MILLER^MARTHA	NK1-2
• Relationship to client	MTH	NK1-3
• Address	123 MAIN ST LINCOLIN, NE 68509 NE109 (Lancaster County, NE)	NK1-4
• Phone	402 123 4567	NK1-5
• Responsible Person		NK1 segment
• Name	MILLER^GEORGE	NK1-2
• Relationship to client	FTH	NK1-3
• Immunization (historical)		RXA segment
• Date administered	19990723	RXA-3
• CVX Code	20	RXA-5
• Dose size	0.5	RXA-6
• Administration Notes	01	RXA-9
• Administering Provider Organization	Valley Clinic	RXA-11.4
• Client #2		PID segment

Information to transmit	Data value to be entered	HL7 Format
• Chart Number	23LK729	PID-3
• Name	CALIFANO^MARIA	PID-5
• Mother's maiden name	DISTEFANO^ANGELICA	PID-6
• Birth date	19990413	PID-7
• Sex	F	PID-8
• Immunization (historical)		RXA segment
• Date administered	19990723	RXA-3
• CVX Code	20	RXA-5
• Dose size	0.5	RXA-6
• Administration Notes	01	RXA-9
• Administering Provider Organization	Valley Clinic	RXA-11.4
• Immunization (historical)		RXA segment
• Date administered	19990723	RXA-3
• Package Description	10 pack-1 dose vials	RXA-5
• NDC Code	00006-4681-00^NDC	RXA-5
• Dose size	0.5	RXA-6
• Administration Notes	01	RXA-9
• Administering Provider Organization	Valley Clinic	RXA-11.4
• Client #3		PID segment
• Chart Number	92HG9257	PID-3
• Name	FISHER^JOSEPH	PID-5
• Mother's maiden name	LASOWSKI^MARY	PID-6
• Birth date	20080703	PID-7
• Sex	M	PID-8
• Immunization (new)		RXA segment
• Date administered	20100102	RXA-3
• CVX Code	127	RXA-5
• Dose	0.25	RXA-6
• Administering Clinician	(Note the clinician last name will not be recorded in the example. An informational error is generated as a result of a missing value in an optional field.)	RXA-10
• Lot number	NVB23423	RXA-15
• Lot manufacturer	PMC^sanofi pasteur^HL70227	RXA-17
• Eligibility		OBX segment
• Vaccine fund pgm elig cat	64994-7	OBX-3
• VFC Eligibility code	V01^Insured, Vaccines Covered^HL70064	OBX-5
• Funding Source		OBX segment
• Vaccine purchased with	30963-3	OBX-3
• Vaccine Funding Source	PVF^Private Funds^NIP008	OBX-5
• Immunization (new)		RXA segment
• Date administered	20101205	RXA-3
• CVX Code	03	RXA-5
• Dose	0.5	RXA-6
• Administering Clinician	^Doe^Jane	RXA-10
• Lot number	AD19487	RXA-15
• Lot manufacturer	MSD^MERCK^HL70227	RXA-17
• Eligibility		OBX segment
• Vaccine fund pgm elig cat	64994-7	OBX-3
• VFC Eligibility code	V03^Uninsured^HL70064	OBX-5
• Funding Source		OBX segment
• Vaccine purchased with	30963-3	OBX-3

Information to transmit	Data value to be entered	HL7 Format
• Vaccine Funding Source	PBF^Public Funds^NIP008	OBX-5
• Immunization (new - alt. dosage type)		RXA segment
• Date administered	20101205	RXA-3
• CVX Code	43	RXA-5
• NDC	00006-4995-00^^NDC	RXA-5
• Dose	10.0	RXA-6
• Dose Type	MCG	RXA-7
• Administering Clinician	^Doe^Jane	RXA-10
• Lot number	RA1234	RXA-15
• Lot manufacturer	MSD^MERCK^HL70227	RXA-17
• Eligibility		OBX segment
• Vaccine purchased with	64994-7	OBX-3
• VFC Eligibility code	V03^Uninsured^HL70064	OBX-5
• Funding Source		OBX segment
• Vaccine purchased with	30963-3	OBX-3
• Vaccine Funding Source	PBF^Public Funds^NIP008	OBX-5

In an HL7 message, each segment is a single text line, ending with the carriage return character. In the examples, long lines are broken artificially for display purposes and the carriage return character is denoted by <CR>.

```
MSH|^~\&|VALSYS|VALCLIN||NESIIS|19990802091524||VXU^V04|00000123|P|2.4|||AL<CR>
PID|||45LR999^^^^PI||MILLER^GEORGE^M^JR|OLSON^MARTHA|19950227|M|||123 MAIN ST^^
      LINCOLN^NE^68509^US^^^NE109||(402)987-6543||||||444111222|||||Y|2<CR>
PD1 ||||||||||||02^REMINDER/RECALL ANY MENTOD^HL70215|Y|A<CR>
NK1|1|MILLER^MARTHA|MTH^Mother^HL70063|123 MAIN ST^^ LINCOLN^NE^68509^US^^^NE109|(402)123-
      4567<CR>
NK1|2|MILLER^GEORGE|FTH^Father^HL70063<CR>
RXA|0|999|19990723|19990723|20^DTaP^CVX^^^|0.5|||01|VALCLIN<CR>
MSH|^~\&|VALSYS|VALCLIN||NESIIS|19990802091524||VXU^V04|00000124|P|2.4|||ER<CR>
PID|||23LK729^^^^PI^||CALIFANO^MARIA|DISTEFANO^ANGELICA|19980413|F<CR>
RXA|0|999|19990723|19990723|20^DTaP^CVX^^^|0.5|||01|VALCLIN<CR>
RXA|0|999|19990723|19990723|^^^00006-4681-00^10 pack-1 dose vials^NDC|0.5|||01|VALCLIN<CR>
MSH|^~\&|VALSYS|VALCLIN||NESIIS|19990802091526||VXU^V04|00000125|P|2.4|||ER<CR>
PID|||927389^^^^SR^~92HG9257^^^^PI^||FISHER^JOSEPH|LASOWSKI^MARY|20080703|M<CR>
RXA|0|999|20100102|20100102|127^H1N1^CVX^^^|0.25|||00|^^JANE^^^^^^^^^^VEI^^|||||NVB23423||PMC^
      sanofi pastuer^HL70227^^^|||<CR>
OBX|1|CE|64994-7^Vaccine fund pgm elig cat^LN^^^||V01^Insured, Vaccines
      Covered^HL70064||||||F|
OBX|2|CE|30963-3^Vaccine purchased with^LN^^^||PVF^Private Funds^NIP008||||||F|
RXA|0|999|20101205|20101205|03^MMR^CVX^^^|0.5|||00|^DOE^JANE^^^^^^^^^^VEI^^|||||AD19487||
      MSD^MERCK^HL70227|||||A<CR>
OBX|1|CE|64994-7^Vaccine fund pgm elig cat^LN^^^||V03^Uninsured^HL70064||||||F|
OBX|2|CE|30963-3^Vaccine purchased with^LN^^^||PBF^Public Funds^NIP008||||||F|
RXA|0|999|20101205|12011205|43^HEPB-ADULT^CVX^00006-4995-00^^NDC|10.0|MCG||00|^DOE^JANE
      ^^^^^^^^^^VEI^^|||||RA1234||MSD^MERCK^HL70227|||||A<CR>
OBX|1|CE|64994-7^Vaccine fund pgm elig cat^LN^^^||V03^Uninsured^HL70064||||||F|
OBX|2|CE|30963-3^Vaccine purchased with^LN^^^||PBF^Public Funds^NIP008||||||F|
```

Note: When a client is being introduced to NESIIS, the VXU message is recommended, since NESIIS must have at least one immunization for a client before being added to the database. In the example above, Valley Clinic sends a file of three HL7 messages to NESIIS.

Client George M Miller Jr. is identified by Valley Clinic's chart number, 45LR99 and SSN 00111222, in his PID segment. The message could have included George's NESIIS ID number in field PID-3, but does not have to, if it is not recorded in Valley Clinic's system. George's mother's maiden name, his birth date, gender and address, also serve to identify him. Some other optional fields are not present, including some fields from the full HL7 standard not defined in this document because they are not used by NESIIS. Fields not present do not diminish the number of "|" delimiters, so later fields can be identified by ordinal position in the segment. Two NK1 segments give some information for George's mother and father, just the minimum required for his father, with address and telephone fields for his mother.
The PID segments in the third messages give a NESIIS client ID in field PID-3. This must have been transmitted earlier from NESIIS to Valley Clinic's system. In this case it is legitimate to omit more of the optional PID fields, since NESIIS must have

at least the minimum required information for these clients even to create a record. However, if there is a possibility that Valley Clinic has new or changed information to send to NESIIS, these fields should be present, and it does no harm to repeat fields even if they have been transmitted previously.

```
MSH|^~\&|NESIIS7.2.6|NESIIS||VALCLIN|20110128101125||351849.674703.36.2011.01.28|||||ACK|00000
123|P|2.4<CR>
MSA|AA|00000123|Record rejected. Message type not supported when client does not already exist
in registry.<CR>
MSH|^~\&|NESIIS7.2.6|NESIIS||VALCLIN|20110128101125||351849.674703.36.2011.01.28|||||ACK|00000
124|P|2.4<CR>
MSH|^~\&|NESIIS7.2.6|NESIIS||VALCLIN|20110128101125||351849.674703.36.2011.01.28|||||ACK|00000
125|P|2.4<CR>
MSA|AR|00000125|INFORMATIONAL ERROR - Administering provider last name is required to use
administering provider field.<CR>
ERR|RXA^15^10^0<CR>
```

NESIIS answers the file from the above example with a file of ACK messages. Valley Clinic's message 00000123 had the value AL in field MSH-16, asking for acknowledgements of all messages. The value AA in MSA-1 indicates that this message was rejected. The next message, 00000124, uses the value ER to ask for acknowledgement only in case of errors, so this message is acknowledged implicitly by the absence of an MSA Message Acknowledgment Segment for it. This example while legitimate is for purposes of illustration and most providers will probably prefer to follow the NESIIS recommendation of error acknowledgements only. The last message, 00000125, did contain an error, and the ERR segment in its acknowledgement indicates the segment ID (RXA) of the segment, the line number (15) where it appears in the input file, the errant field (10)and the field component (0). The MSA segment contains the error message. Errors will be generated for missing required data, invalid data or any other deviance from the form and content of messages as specified in this document. If all three messages in the first file above had requested error acknowledgement only and none had any errors, then the answering file from NESIIS would contain just the batch header, MSH, and batch footer segments. All the messages would be implicitly acknowledged as successfully processed.

In the sample file exchange above, the outside system initiated the exchange with the file of VXU segments and NESIIS responded with ACK segments. The format is identical when NESIIS sends VXU segments out and the ACK responses are similar, too. In the MSH segment, the values of the fourth and sixth fields are reversed to show sender and receiver. NESIIS always sends its own client identifier in the required field PID-3 and includes the outside system's identifier in PID-3 if known. Outside systems are encouraged to store NESIIS's client ID, and use it in PID-03 when sending to NESIIS. This provides a firm basis for client identification makes processing easier for the NESIIS system and avoids errors in storing client information, such as creation of duplicate records when an insufficiently identified client record cannot be matched with a record already in the NESIIS database. Though NESIIS makes a great effort to match client records effectively, use of the NESIIS client ID is the best guarantee of clean and useful data.

Real-time Processing

Real-time Processing
Meaningful Use Stage 2 and above requires facilities to automate their data exchange submissions with NESIIS. In Stage 2 this requirement is one-way and in Stage 3 it moves to a two-way relationship with the facility EHR having the ability to query NESIIS.

NESIIS has these abilities and uses true bi-directional exchange with some facilities already. The methods used to automate the connection are either:

PHINMS – a small sending service installed at the client site (or EHR hub); full install and configuration provided by NESIIS resources. PHINMS is also ebXML version 2.0 compliant, and it is possible to connect to NESIIS via an ebXML client masquerading as a PHINMS service.

SOAP Web Services – NESIIS added this option in early 2013 after CDC recommendations to move beyond PHINMS to something more standardized.

Automation of data exchange is worked on only after a thorough testing of files by the submitter. Once this is completed, instructions specific to the service chosen (PHINMS or SOAP) will be provided by NESIIS data exchange staff.

The following section outlines the various message types that are sent in real-time files.

Real-time files that provider organizations send to the NESIIS can contain any of the following message types:

Real-time Process Message Types

VXU^V04
Unsolicited Vaccination Update

MSH	Message Header
PID	Patient Identification
[PD1]	Patient Additional Demographic
[{NK1}]	Next of Kin / Associated Parties
[PV1]	Patient Visit
RXA	Pharmacy / Treatment Administration (at least ONE RXA is REQUIRED by NESIIS)
[RXR]	Pharmacy / Treatment Route (Only one RXR per RXA segment)
[{OBX}]	Observation/Result

VXQ^V01
Query for Vaccination Record

MSH	Message Header Segment
QRD	Query Definition Segment
QRF	Query Filter Segment (NESIIS has made this segment REQUIRED)

Real-time (response) files that the NESIIS sends to provider organizations can contain any of the following message types:

VXR^V03
Response TO Vaccination Query Returning the Vaccination Record

MSH	Message Header Segment (One per message)
MSA	Message Acknowledgment Segment (One per message)
QRD	Query Definition Segment (One per message)
QRF	Query Filter Segment (One per message—required by NESIIS)
PID	Patient Identification Segment (One per matching client)
[PD1]	Additional Demographics
[{NK1}]	Next of Kin Segment (Optional, zero or more per matching client)
[PV1]	
[{	
RXA	Pharmacy Administration
[RXR]	Pharmacy Route

[{OBX}]	Observation/Result Contraindications or Reactions
}]	
[{OBX}]	Observation/Result Vaccines Due Next

VXX^V03

Response TO Vaccination Query (Returning Multiple PID Matches)

MSH	Message Header Segment (One per message)
MSA	Message Acknowledgment Segment (One per message)
QRD	Query Definition Segment (One per message)
QRF	Query Filter Segment (One per message—required by NESIIS)
{	
PID	Patient Identification Segment (One per matching client)
[{NK1}]	Next of Kin Segment (Optional, zero or more per matching client)
}	

ACK

General Acknowledgment

MSH	Message Header Segment
MSA	Message Acknowledgment Segment
[ERR]	Error

QCK

Query General Acknowledgment

MSH	Message Header Segment
MSA	Message Acknowledgment Segment
[ERR]	Error
[QAK]	Query Acknowledgment Segment

This document outlines the rules/specifications needed to construct a HL7 message. These same rules must be applied for Real-time message processing. **Note: Batch Message Headers (i.e. FHS, BHS) and footers (i.e. FTS, BTS) are NOT required for Real-time processing.

Real-time Process Message Segments

The message segments below are needed to construct message types that are used by NESIIS. Each segment is given a brief description excerpted from the HL7 standard. The tables define what fields make up each segment. Since NESIIS does not use all the fields that HL7 defines, there are sometimes gaps in the ordinal sequence of fields. Following HL7 rules, the gaps do not diminish the number of field separators within the segment. For example, if the second and third fields in a segment are not present, their field separators remain in order to indicate that the next field present is the fourth: field1|||field4.

MSH Segment

Message Header Segment

For VXU and VXQ message types, the MSH segment must be constructed according to normal HL7 format specifications (refer to Pg. 5 of this document). For Real-time processing, NESIIS limits the number of MSH segments that can be processed in a single file. Files containing more than 1000 MSH segments will be rejected and an ACK message will be generated, informing the provider that 1000 is the maximum number of MSH segments that NESIIS accepts for Real -time processing.

1. VXU^V04 (Unsolicited Vaccination Record Update)
   As stated earlier in this document, the VXU message is used for sending client demographic and immunization specific data. This message type can be sent via Real-time. VXU segments should be constructed according to normal HL7 format specifications (refer to pages 5-9 of this document). A VXU message must be received in the HL7 2.4 format; NESIIS does not support prior HL7 versions for Real-time processing. NESIIS validates the version by reading the MSH-12 field. A VXU message must contain |2.4^^| in MSH-12.

   Notes:

   Results for a file submitted with a maximum of 10 transactions (MSH) can be sent in a real-time response file.

If the number of the number of transactions (MSH) exceeds the maximum allowed (10) then your real-time request will process as a batch load. To obtain the results of real time job processed as a batch load, send a VXQ with RTI^REAL TIME INFORMATION^HL70048 in QRD-9 and JOB_ID^352069 in QRD-12 where 352069 is job id that was indicated in real-time ACK message. You can also login to NESIIS and view the results on the Data Exchange Check Status

```
MSH|^~\&|VALSYS|VALCLIN|NESIIS|NESIIS||20110127||VXQ^V01|0000001|P|2.4||||ER
QRD|201101270123|R|I|01|||||RTI^REAL TIME INFORMATION^HL70048|||JOB_ID^352069|
```

Immunization deletions can be submitted for both batch HL7 2.4 and Real-time submissions. To indicate a deletion, the RXA-21 field must be populated with a value of "D". Below is an example of a RXA deletion segment. If the number of deletions received through batch exceeds 5% of the total number of immunizations or more than 50 immunizations are marked for deletion, NESIIS will reject the file. Providers are only able to delete immunizations that were entered by their organization.

RXA|0|999|19860715|19860715|^^^00006-4133-41^10 pack-1 dose vials^NDC
|0|||05^^^^^||^^^208^^^^^^^^^^^^|||||||D|

2. VXQ^V01 (Query for Vaccination Record)
When a health care provider (participating in an immunization registry) needs to obtain a complete patient vaccination record, a VXQ (query) is sent to the immunization registry for the definitive (last updated) immunization record. The three segments that make up a VXQ message are the MSH (message header), QRD (query definition) and QRF (query filter). For a VXQ message, the MSH-09 field must contain |VXQ^V01| and the segments must be in the following sequence order:

```
MSH|^~\&|VALSYS|VALCLIN|NESIIS|NESIIS|2010212091511||VXQ^V01|0000001|P^|2.4||||ER
QRD|20100522|R|I|000000001|||0^RD|4211^KENNEDY^JOHN^FITZGERALD^JR|VXI^VACCINE
INFORMATION^HL70048|S11S|
QRF|MA0000||||256946789~19900607~NE~MA99999999~88888888~KENNEDY^JACQUELINE^LEE~BOUVIER~8986
66725~KENNEDY^JOHN^FITZGERALD~822546618|
```

The QRD and QRF segments are outlined in detail below.

QRD Segment

Query Definition Segment. Used to define a query.

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	26	TS	R			Query date/time
2	1	ID	R		0106	Query Format Code
3	1	ID	R		0091	Query Priority
4	10	ST	R			Query ID
5	1	ID	O		0107	Deferred response type
6	26	TS	O			Deferred response date/time
7	10	CQ	R		0126	Quantity limited request
8	60	XCN	R	Y		Who subject filter
9	60	CE	R	Y	0048	What subject filter
10	60	CE	R	Y		What department data code
11	20	CM	O	Y		What data code value qualifier
12	1	ID	O		0108	Query results level

Field Notes:

QRD-01 Date the query was generated by the application program. NESIIS requires this field and verifies that a valid date is received. The minimum format of YYYYMMDD is required. A null/invalid value results in message rejection.

QRD-02 Query/response format code. NESIIS requires this field and only accepts a value of "R". A null/invalid value results in message rejection.

QRD-03 Time frame in which the response is expected. NESIIS requires this field and only accepts a value of "I". A null/invalid value results in message rejection.

QRD-04 Unique identifier for the query assigned by the querying application. NESIIS requires this field and null/invalid values result in message rejection. This field is returned intact by NESIIS in a response (VXR or VXX).

QRD-05 Used to indicate a deferred response. This is an optional field. NESIIS does not support a deferred response.

QRD-06 Used to indicate the date/time of the deferred response. This is an optional field. NESIIS does not support a deferred response.

QRD-07 Maximum length of the response that can be accepted by the requesting system. NESIIS requires this field and only accepts a value of "RD" in the 2nd component. The 1st component is a numerical value. A null/invalid value in either sub-component results in message rejection. NESIIS will interpret the units as the maximum number of client MATCHES to be returned via a VXX response message. If the number of clients that match the query criteria exceeds the number requested by the provider in QRD-07 (or the NESIIS system maximum of 10 matching clients), the query will be rejected.

*Note: NESIIS will return a maximum of 10 records per query message submitted. If a value of 0 (zero) is received (i.e. |0^RD|) then NESIIS will return the maximum allowable number of clients found to be matching the NESIIS.

QRD-08 Identifies the subject of the query or whom the inquiry is about. The 1st component is optional. It is used to identify the NESIIS ID for the client, if known. The 2nd component is required by NESIIS. If the first or last name OR both names are missing (regardless if there are repeating full names after the first) it results in message rejection. NESIIS supports repetition of this field.

Note: If the 1st component is used, NESIIS will find the client in the registry with the matching NESIIS ID. If a match is found, NESIIS will then compare the first and last name along with the birth date of both the matched client and the client in the QRD. If the name and birth date is exact, the client is returned in a VXR. If a client isn't found using the NESIIS ID, NESIIS will ignore that value and find clients that match the remaining information.

QRD-09 Describes the kind of information required to satisfy the request. NESIIS requires this field and a value of "VXI" must populate the 1st component. NESIIS supports repetition of this field. Null/invalid values result in message rejection if the field does not repeat. If the field repeats there must be at least one value of "VXI" to be valid.

QRD-10 Identifies the "what" department data code. NESIIS requires this field and supports repetition of it. Null/invalid values will result in message rejection. Example `|S11S|`

QRD-11 Further refines the inquiry by data code qualifiers by providing a window or range. This is an optional and repeatable field.

QRD-12 Used to control level of detail in results. This field is optional and will be populated by NESIIS with the total count of PID matches found in NESIIS when Query results in a VXX Response Message.

Example:

```
QRD|20100522|R|I|0000001|||0^RD|4211^KENNEDY^JOHN^FITZGERALD^JR|VXI^VACCINEINFORMATION^HL70048
|S11S|
```

QRF Segment

Query Filter Segment. REQUIRED by NESIIS. Used with the QRD segment to further refine the content of a query.

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	20	ST	R	Y		Where subject filter
2	26	TS	O			When data start date/time
3	26	TS	O			When data end date/time
4	60	ST	O	Y		What user qualifier
5	60	ST	R	Y		Other query subject filter
6	12	ID	O	Y	0156	Which data/time qualifier
7	12	ID	O	Y	0157	Which date/time status qualifier
8	12	ID	O	Y	0158	Date/time selection qualifier
9	60	TQ	O	Y		When quantity/timing qualifier

Field Notes:

QRF-01 Identifies the department, system or subsystem to which the query pertains. NESIIS requires this field. A null/invalid value results in message rejection.

QRF-02 Data representing dates and times (registries do not value this component). This is an optional field.

QRF-03 Data representing dates and times (registries do not value this component). This is an optional field.

QRF-04 An identifier to further define characteristics of the data of interest. This is an optional field.

QRF-05 This field is used by registries to transmit up to ten separate search "keys". NESIIS requires this field and does NOT support repetition or possible all key values. **The 2nd component (patient Birth Date) is minimally required by NESIIS.** A null/invalid format results in message rejection. Format is YYYYMMDD.

The QRF-05 key values in are submitted in order separated by the repeating character ' ~ '

Order	Key Item	Query field supported in NESIIS?
1.	Patient SSN	Not Supported; Value ignored if sent
2.	**Patient Birth Date (YYYYMMDD)**	**Supported ; Required**
3.	Patient Birth State	Not Supported; Value ignored if sent
4.	Patient Birth Cert	Not Supported; Value ignored if sent
5.	Patient Medicaid Number	Not Supported; Value ignored if sent
6.	Mother's Name (Last^First^)	Supported; Optional Queries against Mother's Maiden Last Name and First Name available in NESIIS client deduplication program
7.	Mother's Maiden Name (Last)	Not Supported; Value ignored if sent
8.	Mother's SSN	Not Supported; Value ignored if sent
9.	Father's Name (Last^First^Middle)	Not Supported; Value ignored if sent
10.	Father's SSN	Not Supported; Value ignored if sent

Examples:

```
QRF|MA0000||||256946789~19900607~NE~MA99999999~88888888~BOUVIER^JACQUELINE^LEE~BOUVIER~
898666725~KENNEDY^JOHN^FITZGERALD~822546618|
```

VXR^V03 – Response TO Vaccination Query (Returning the Vaccination Record)

When a patient has been uniquely identified (there is only one "match" to the query), the response to the query is a VXR^V03 message that is generated and sent back to the querying organization. NESIIS has imposed rules for when a VXR will be sent to the querying organization. Please see the following rules:

1. If an exact match is found in NESIIS AND the client's "Allow Sharing of Immunization Data" indicator is set to "NO", then that client will **NOT** be returned to the requestor unless one of the statements below pertains:
   - The organization requesting the query is the Master organization of a Parent organization owning the data **OR**
   - The organization requesting the query had originally set the "Allow Sharing of Immunization Data" indicator to NO.
2. If an exact match is found in NESIIS AND the client's "Allow Sharing of Immunization Data" indicator is set to "NO" (and none of the above rules apply), then a QCK response is sent instead of the VXR message.

3. NESIIS will only return eligible vaccines in vaccine recommendations. NESIIS will not supply vaccines that are ineligible due to age restrictions, contraindications or other such rules. NESIIS will supply vaccines according to CDC/ACIP schedule.

VXR^V03

Several segments make up the VXR message type. The following segments have been outlined previously in this document and will follow the same formatting for the VXR message type.

MSH, MSA, QRD, QRF, PID, PD1, NK1, PV1, RXA, RXR, OBX (Observation/Result Contraindications or Reactions)

In addition to supplying the querying organization with client specific demographic and immunization data (contained in the above segments), the VXR message also specifies "Observation/Result Vaccines Due Next" information. This information is supplied by generating a multiple OBX segments per 1 recommendation. NESIIS will report the Vaccination Schedule in the OBX segments through the specification of the LOINC code 30979-9 (Vaccines Due Next) and its sub-components in OBX-03. NESIIS requires specification of OBX-05 when OBX-03 is specified and valid. Further, NESIIS has superimposed a CE data type on the OBX-05 field. The corresponding observation values will be specified in OBX-05. Combinations are as follows:

OBX-03	**OBX-05**
30979-9	HL70292 (Codes for vaccines administered CVX)
30979-9&30980-7	Date Vaccine Due (NESIIS provides date recommended)
30979-9&30973-2	Vaccine due next dose number
30979-9&30981-5	Earliest date to give (NESIIS provides)
30979-9&30982-3	Reason applied by forecast logic to project this vaccine

Below you'll find an example of what a recommendation might look like in a VXR message response (see **bolded** OBX's below).

```
MSH|^~\&|NESIISHL7 2.4^^|NESIIS^^||QUERYORGSHORTNAME^^|20110128||VXR^V03|0000033|P^|2.4^^|
      ||ER
MSA|AA|0000033||0||0^Message Accepted^HL70357^^^
QRD|20110106|R|I|000000033|||25^RD^^^^^|^WALKER^MARCH^JAMES^^^^^^^^^^|VXI^VACCINEINFORMATION^
      HL70048^^^|S11S^^^^^||1
QRF|MA0000||||~20030701~~~~~~~~
PID|||7130737^^^^SR^~MAR2342^^^^PI^||WALKER^MARCH^JAMES^^^^^|WATSON^MELINDA^^^^^^|20030701|M||
      |8776 OAK ST^^LANGDON^NE^23423^^RP^^MO005^^||(993)2342342^PRN^PH^^^993^2342342^^|||||||
PD1||||||||||02^^^^^|Y||||A
NK1|1|LIGHTHOUSE^MELINDA^^^^^^|MTH^MOTHER^HL70063^^^^^^^^|8776 OAK ST^^LANGDON^NE^23423^^
      RP^^^^| (993)234-2342^PRN^PH^^^993^2342342^^
PV1||R|||||||||||||||V01^
RXA|0|777|20110107|20110107|140^Influenza Preservative-Free^CVX^49281-0013-10^10 pack-1 dose
vials^NDC|1.0|||00^^^^^~41209570^NESIIS immunization id^IMM_ID^^^|
      ^Doe^Jane^^^^^^^^^^REI^^|^^^IR Physicians^^^^^^^^^^||||12345||PMC^PMC^MVX^^^|||
RXR|IM^^^^^|RA^^^^^
RXA|0|0|20030701|20030701|998^No Vaccine Administered^CVX|999|
OBX|1|CE|30979-9^Vaccines Due Next^LN^^^|1|85^HepA, unspecified formulation^CVX^90730^HepA,
      unspecified formulation^CPT||||||F|
OBX|2|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|1|20040701||||||F|
OBX|3|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|1|1||||||F|
OBX|4|TS|30979-9&30981-5^Earliest date to give^LN^^^|1|20040701||||||F|
OBX|5|CE|30979-9&30982-3^Reason applied by forecast logic to project this
      vaccine^LN^^^|1|^ACIP schedule||||||F|
OBX|6|CE|30979-9^Vaccines Due Next^LN^^^|2|45^HepB, unspecified formulation^CVX^90731^HepB,
      unspecified formulation^CPT||||||F|
OBX|7|TS|30979-9&30980-7^Date Vaccine Due^LN^^^|2|20030701||||||F|
OBX|8|NM|30979-9&30973-2^Vaccine due next dose number^LN^^^|2|1||||||F|
OBX|9|TS|30979-9&30981-5^Earliest date to give^LN^^^|2|20030701||||||F|
OBX|10|CE|30979-9&30982-3^Reason applied by forecast logic to project this
      vaccine^LN^^^|2|^ACIP schedule||||||F|
```

VXX^V03

Response TO Vaccination Query (Returning Multiple PID Matches)

When a health care provider participating in an immunization registry needs to obtain a complete patient vaccination record, a query (VXQ message) is sent to the immunization registry for the definitive (last updated) immunization record. When a query results in multiple patient matches, the VXX message response is generated. The VXX contains multiple clients and their

demographic information but does not contain their vaccination information. The number of matches that NESIIS generates will depend on what is specified in the first component of the incoming VXQ (QRD-07 Quantity Limited request field). NESIIS will interpret the quantity specified in this field as the maximum number of client matches that the requester desires.

For example:
If the query results in 4 matches and the original quantity specified in QRD-07 was 10, then NESIIS generates 4 PID (and if applicable, associated NK1) segments in the VXX response message.

NESIIS has imposed rules for when a VXX will be sent to the querying organization. Please see the following rules:

1. If the "Allow Sharing of Immunization Data" indicator is set to No (in NESIIS) for a client found matching the query, then that client will **NOT** be returned to the requestor unless one of the statements below pertains:
   - The requestor is the Master organization of the Parent organization owning the data OR
   - The organization requesting the query had originally set the "Allow Sharing of Immunization Data" to No.
   - If the number of clients that match the query criteria exceeds the number requested by the provider in QRD-07 (or the NESIIS system maximum of 10 matching clients), the query will be rejected.

The following scenarios outline when a VXX message will be sent back when multiple matches are found, but some of the matches have an "Allow Sharing of Immunization Data" indicator of "No". In all instances, the internal NESIIS ID for each client will be returned in PID-03. Providers can use the NESIIS ID in the first component QRD-08 as part of a VXQ to return the specific client.

Scenario 1:

The following paragraph holds true, assuming that the VXQ has 0 in QRD-07 (meaning that the provider org. wants the maximum number of clients sent back).

If NESIIS matches 4 clients and only 3 of those clients have the "Allow Sharing of Immunization Data" indicator set to "Yes", then those 3 clients will be sent back in the VXX message and the remaining client (having indicators of "No") will not be sent back. The QRD-12 field (in the VXX) will reflect the total number of matches found in NESIIS (4 in our example) and the querying organization will need to assume that the 1 client that was not returned had the "Allow Sharing of Immunization Data" indicator set to "No".

Example:

VXQ

```
MSH|^~\&||QUERYORGSHORTNAME|||20110106||VXQ^V01|0000001|P|2.4||||ER
QRD|20110106|R|I|000000001|||25^RD|^EMERSON^KERRY^JEANETTE|VXI^VACCINEINFORMATION^HL700
48|S11S|
QRF|MA0000||||~20060106~|
```

VXX

```
MSH|^~\&|NESIISHL72.4^^|NESIIS^^||QUERYORGSHORTNAME^^|20110128||VXX^V02|0000001|P^|2.4^
      ^|||ER
MSA|AA|0000001||0||0^Message Accepted^HL70357^^^
QRD|20110106|R|I|000000001|||0^RD^^^^^|^EMERSON^KERRY^J^^^^^^^^^^|VXI^
      VACCINEINFORMATION^HL70048^^^|S11S^^^^^||4
QRF|MA0000||||~20060106~~~~~~~~
PID|||7127917^^^^SR^~^^^^PI^||KERRY^EMERSON^JEANETT^^^^^|RANDOLPH^KARA^^^^^^|20060106|F
      ||2106-3^^^^^|332 440 HAZEL ST^APT 2D^MERRIMAC^NE^68870^^CA^^NE047^^||(223)336-
      7672X45^^PH^^^223^3367672^45^|||||||||||||||
PID|||7128257^^^^SR^~^^^^PI^||KERRY^EMERSON^J^^^^^|WATERS^JULIE^^^^^^|20060106|F|||2342
      OAK TERRANCe^^OMAHA^NE^62078^^CA^^NE039^^||(234)223-
      5252^^PH^^^234^2235252^^|||||||||||||||
NK1|1|EMERSON^JAMES^^^^^^|FTH^FATHER^HL70063^^^^^^^^|2342 ELM
      ST^^LINCOLN^NE^60880^^RP^^^^|(838)234-2234^PRN^PH^^^838^2342234^^
NK1|2|EMERSON^JULIE^^^^^^|MTH^MOTHER^HL70063^^^^^^^^|2333 ELM
      ST^^LINCOLN^NE^83234^^RP^^^^|(823)823-4234^PRN^PH^^^823^8234234^^
PID|||7124297^^^^SR^~^^^^PI^||KERRY^EMERSON^JEANETTE^^^^^||20060106|F||2106-3^^^^^|45
      HAZEL ST^APT 2D^MERRIMAC^NE^68870^^RP^^NE079^^||(223)336-
      7672X45^^PH^^^223^3367672^45^|||||||||||||||
NK1|1|KERRY^EMERSON^J^^^^^|SEL^SELF^HL70063^^^^^^^^|19 S RICHMOND BLVD^APT
      1A^KEARNEY^NE^68845^^RP^^^^|(402)751-6321X518423^PRN^PH^^^402^7516321^518423^
NK1|2|KERRY^KARA^^^^^^|MTH^MOTHER^HL70063^^^^^^^^|8383 CAROL AVE.^^GRAND
```

```
       ISLAND^NE^68000^^RP^^^^|(030)332-2342^PRN^PH^^^030^3322342^^
NK1|3|KERRY^GARY^^^^^^|FTH^FATHER^HL70063^^^^^^^^|2343 HIGH
       STREET^^OMAHA^NE^69789^^RP^^^^|(234)232-4252^PRN^PH^^^234^2324252^^
```

Scenario 2:
If NESIIS only matches clients that have the "Allow Sharing of Immunization Data" indicator set to "No", then a QCK is generated. The QCK message will be comprised of the MSH, MSA and QAK segments. The MSA-01 field will have a value of "AR" (Application Reject). The MSA-03 field will display a message similar to "Client has an Allow Sharing of Immunization Data indicator = No". MSA-06 text will display, "Record not released".

Example:

VXQ

```
MSH|^~\&||QUERYORGSHORTNAME|||20110106||VXQ^V01|0000025|P|2.4||||ER
QRD|20110106|R|I|000000026|||25^RD|^WALKER^APRIL^EVELYN|VXI^VACCINEINFORMATION^
       HL70048|S11S|
QRF|MA0000|||~20000101~|
```

QCK

```
MSH|^~\&|NESIISHL7 2.4^^|NESIIS^^||QUERYORGSHORTNAME^^|20110127||QCK^|0000025|
P^|2.4^^|||ER
MSA|AE|0000025|Client has an 'Allow Sharing of Immunization Data' indicator =
No.|0||500^Record not released^HL70357^^^

QAK|000000026|NF|
```

ACK

Acknowledgment Messages (with Errors)

ACK messages are generated for message rejections and for informational error messages. Three conditions that result in message rejection are:

1. Sequencing (i.e. a PID segment must follow an MSH segment.)
2. Segment required fields contain no data.
3. Segment required fields contain invalid data.

An ACK is also generated when an informational error message has occurred, but it has not resulted in message rejection (i.e. NK1 segment contains no last name). In this case, the segment is ignored but the remainder of the message is processed. An ACK message is generated with a message informing the sender of the problem. The error message in the text does NOT include "Message Rejected". The ACK contains the MSH, MSA and ERR segments.
The MSH segment is generated according to normal HL7 processing guidelines. The MSA and ERR segments are detailed below:

MSA Segment in ACK message

Message Acknowledgment Segment

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	2	ID	R		0008	Acknowledgment code
2	20	ST	R			Message control ID
3	80	ST	O			Text message
4	15	NM	O			Expected sequence number
5	1	ID	B		0102	Delayed acknowledgment type
6	100	CE	O		0357	Error condition

Field Notes:

MSA-01 The acknowledgment code indicates whether the message was accepted, rejected, error, etc…This is a required field. NESIIS generates an "AR" for messages resulting in informational **or** rejection errors. An "AA" is generated for a simple acknowledgment acceptance. This will be updated to AE for informational errors during 2014.

MSA-02 The message control ID is the unique ID that is sent by the sending system. This is a required field. It allows the sending system to associate each message with a response. In a response, this will be the same as the control ID that was sent in MSH-10 by the sending system.

MSA-03 This optional field further describes an error condition. When a message has been rejected, NESIIS generates "Message Rejection" as the first portion of the text describing the error message. Informational messages will not contain "Message Rejection".
MSA-04 This optional numeric field is used in the sequence number protocol. NESIIS does not generate this field.
MSA-05 Delayed Acknowledgement type. NESIIS does not generate this field.
MSA-06 Error Condition. Refer to HL7 table 0357 for possible values.

QRF Segment

Error Segment

The Error segment (ERR) is used to add error comments to acknowledgment messages. If the message was rejected for functional reasons, this segment will locate the error and describe it using locally established codes. Field components include:

<segment ID (ST)>^<sequence (NM)>^<field position (NM)>^<code identifying error (CE)>

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	80	CM	R		0357	Error code and location

Example:

ACK

```
MSH|^~\&|NESIISHL7 2.4^^|NESIIS^^||QUERYORGSHORTNAME|20110107||ACK^|0000001
      |P^|2.4^^|||ER
MSA|AE|0000001|MESSAGE REJECTED - Date of birth is a required field|0||101^Required
      field missing^HL70357^^^
ERR|QRF^2^5^2
```

QCK

Query General Acknowledgment

A QCK message is generated when NESIIS has processed the query message, but no match was found to the query parameters in the database. NESIIS does NOT generate this response message for anything other than no match found (for successful VXQ processing). Remember, error messages are reported through the use of the ACK response message; therefore, the optional [ERR] segment will never be generated for the QCK response message.

The MSH segment is generated according to normal HL7 processing guidelines. The MSA and QAK segments are detailed below:

MSA Segment in QCK message

Message Acknowledgment Segment

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	2	ID	R		0008	Acknowledgment code
2	20	ST	R			Message control ID
3	80	ST	O			Text message
4	15	NM	O			Expected sequence number
5	1	ID	B		0102	Delayed acknowledgment type
6	100	CE	O		0357	Error condition

Field Notes:

MSA-01 The acknowledgment code indicates whether the message was accepted, rejected, error, etc…This is a required field. NESIIS generates an AA for this field if no match is found in NESIIS. An AR is generated if a match is found, but the "Allow sharing of data" indicator is No.
MSA-02 The message control ID is the unique ID that is sent by the sending system. This is a required field. It allows the sending system to associate each message with a response. In a response, this will be the same as the control ID that was sent in MSH-10 by the sending system.
MSA-03 This optional field further describes an error condition. When a message has been rejected, NESIIS generates "Message Rejection" as the first portion of the text describing the error message. Informational messages will not contain "Message Rejection".

MSA-04 This optional numeric field is used in the sequence number protocol. NESIIS does not generate this field.
MSA-05 Delayed Acknowledgement type. NESIIS does not generate this field.
MSA-06 Error Condition. Refer to HL7 table 0357 for possible values.

QAK Segment

Query Acknowledgment Segment

SEQ	LEN	DT	R/O	RP/#	TBL#	ELEMENT NAME
1	32	ST			00696	Query Tag
2	2	ID	O		00708	Query response status

Field Notes:

QAK-01 This field is valued by the initiating system to identify the query and can be used to match response messages to the originating query. If it is valued, the responding system is required to echo it back as the first field in the QAK. NESIIS uses the value specified in the QRD-04 (of the VXQ) for the QAK-01 query tag value.

QAK-02 This field allows the responding system to return a precise response status. Refer to HL7 table 0208 for values. NESIIS only generates NF (no data found, no errors) for this field.

Example:

QCK

```
MSH|^~\&|NESIISHL7 2.4^^|NESIIS^^||QUERYORGSHORTNAME|20110106||QCK^|0000001|
       P^|2.4^^|||ER
MSA|AA|0000001||0||0^Message Accepted^HL70357^^^

QAK|000000001|NF|
```

This concludes real-time processing.

Appendix A -- HL7 Data Types

The following descriptions of HL7 data types are excerpted or adapted from the HL7 standard. See the field notes within each segment definition above on how to use data types in particular fields. Some data types have complex definitions much of which does not apply to NESIIS usage, and for these we omit much of the HL7 definition of the data type, referring instead to the field notes in the segment definitions.

CE

Coded Element

```
Components:  <identifier (ST)> ^ <text (ST)> ^ <name of coding system (ST)> ^ <alternate identifier (ST)> ^ <alternate
             text (ST)> ^ <name of alternate coding system (ST)>
```

Example:

```
|F-11380^CREATININE^I9^2148-5^CREATININE^LN|
```

This data type transmits codes and the text associated with the code. To allow all six components of a CE data type to be valued, the maximum length of this data type must be at least 60.

Identifier (ST)

Sequence of characters (the code) that uniquely identifies the item being referenced by the <text>. Different coding schemes will have different elements here.

Text (ST)

Name or description of the item in question. E.g., myocardial infarction or X-ray impression. Its data type is string (ST).

Name of coding system (ST)

Each coding system is assigned a unique identifier. This component will serve to identify the coding scheme being used in the identifier component. The combination of the **identifier** and **name of coding system** components will be a unique code for a data item. Each system has a unique identifier. ASTM E1238-94, Diagnostic, procedure, observation, drug ID, and health outcomes coding systems are identified in the tables in Section 7.1.4 [of the full HL7 standard], "Coding schemes." Others may be added as needed. When an HL7 table is used for a CE data type, the ***name of coding system*** component is defined as ***HL7nnnn*** where ***nnnn*** is the HL7 table number.

Alternate components

These three components are defined analogously to the above for the alternate or local coding system. If the Alternate Text component is absent, and the Alternate Identifier is present, the Alternate Text will be taken to be the same as the Text component. If the Alternate Coding System component is absent, it will be taken to mean the locally defined system.

Note:	The presence of two sets of equivalent codes in this data type is semantically different from a repetition of a CE-type field. With repetition, several distinct codes (with distinct meanings) may be transmitted.

Note:	For HL7-defined tables which have not been adopted from some existing standard, the third component, "name of coding system," is constructed by appending the table number to the string "HL7." Thus, the field *RXR-2-site*, is a CE data type which refers to HL7 table number 0163. Its "name of coding system" component is "HL70163".

CM

Composite

```
Components:  <point of care (IS)> ^ <room (IS) ^ <bed (IS)> ^ <facility (HD) ^ <location status (IS) ^ <patient
             location type (IS)> ^ <building (IS)> ^ <floor (IS)> ^ < street address (ST)> ^ <other designation (ST)>
             ^ <city (ST)> ^ <state or province (ST)> ^ <zip or postal code (ST)> ^ <country (ID)> ^ <address type
             (ID)> ^ <other geographic designation (ST)>

Subcomponents of facility (HD):  <namespace ID (IS)> & <universal ID (ST)> & <universal ID type (ID)>
```

Example:

```
|^^^Valley Clinic|
```

Definition: The first component contains the inpatient or outpatient location at which the drug or treatment was administered (if applicable). The default (null) value is the current census location for the patient. Site-specific table. The first eight components have the same form as the first eight components of *PV1-3-assigned patient location.* The final eight components replace the ninth component of *PV1-3-assigned patient location* and represent the full address specification.

CX

Extended Composite ID with Check Digit

NESIIS uses this data type only for client identification in Patient Identification (PID) segments. See the field notes for values used for NESIIS.

HD

Hierarchic Designator

NESIIS uses this data type only to identify sender and receiver in Message Header (MSH) segments. See the field notes for values used for NESIIS.

ID

Coded Value for HL7 Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a table of legal values. There shall be an HL7 table number associated with ID data types. Examples of ID fields include religion and sex. This data type should be used only for HL7 tables. The reverse is not true, since in some circumstances it is more appropriate to use the CE data type for HL7 tables.

IS

Coded Value for User Defined Tables

The value of such a field follows the formatting rules for a ST field except that it is drawn from a site-defined (or user-defined) table of legal values. There shall be an HL7 table number associated with IS data types. An example of an IS field is the *Event reason code* defined in Section 3.3.1.4 [of the full HL7 standard], "Event reason code." This data type should be used only for user-defined tables. The reverse is not true, since in some circumstances, it is more appropriate to use the CE data type for user-defined tables.

NM

Numeric

A number represented as a series of ASCII numeric characters consisting of an optional leading sign (+ or -), the digits and an optional decimal point. In the absence of a sign, the number is assumed to be positive. If there is no decimal point the number is assumed to be an integer. Examples:

```
|999|
|-123.792|
```

Leading zeroes, or trailing zeroes after a decimal point, are not significant. For example, the following two values with different representations, "01.20" and "1.2", are identical. Except for the optional leading sign (+ or -) and the optional decimal point (.), no non-numeric ASCII characters are allowed. Thus, the value <12 should be encoded as a structured numeric (SN) (preferred) or as a string (ST) (allowed, but not preferred) data type.

SI

Sequence ID

A non-negative integer in the form of a NM field. See the field notes in segments using this data type for specifications of SI fields.

ST

String Data

String data is left justified with trailing blanks optional. Any displayable (printable) ACSII characters (hexadecimal values between 20 and 7E, inclusive, or ASCII decimal values between 32 and 126), except the defined delimiter characters. Example:

```
|almost any data at all|
```

To include any HL7 delimiter character (except the segment terminator) within a string data field, use the appropriate HL7 escape sequence.

Usage note: the ST data type is intended for short strings (e.g., less than 200 characters). For longer strings the TX or FT data types should be used.

TS

Time Stamp

```
Format:  YYYY[MM[DD[HHMM[SS[.S[S[S[S]]]]]]]][+/-ZZZZ]^<degree of precision>
```

Contains the exact time of an event, including the date and time. The date portion of a time stamp follows the rules of a date field and the time portion follows the rules of a time field. The specific data representations used in the HL7 encoding rules are compatible with ISO 8824-1987(E).

In prior versions of HL7, an optional second component indicates the degree of precision of the time stamp (Y = year, L = month, D = day, H = hour, M = minute, S = second). This optional second component is retained only for purposes of backward compatibility.

By site-specific agreement, YYYYMMDD[HHMM[SS[.S[S[S[S]]]]]][+/-ZZZZ]^<degree of precision> may be used where backward compatibility must be maintained.

In the current and future versions of HL7, the precision is indicated by limiting the number of digits used, unless the optional second component is present. Thus, YYYY is used to specify a precision of "year," YYYYMM specifies a precision of "month," YYYYMMDD specifies a precision of "day," YYYYMMDDHH is used to specify a precision of "hour," YYYYMMDDHHMM is used to specify a precision of "minute," YYYYMMDDHHMMSS is used to specify a precision of seconds, and YYYYMMDDHHMMSS.SSSS is used to specify a precision of ten thousandths of a second. In each of these cases, the time zone is an optional component. Maximum length of the time stamp is 26. Examples:

```
|19760704010159-0600|   1:01:59 on July 4, 1976 in the Eastern
                       Standard Time zone.

|19760704010159-0500|   1:01:59 on July 4, 1976 in the Eastern
                       Daylight Saving Time zone.

|198807050000|          Midnight of the night extending from July 4 to
                       July 5, 1988 in the local time zone of the sender.

|19880705|              Same as prior example, but precision extends
                       only to the day. Could be used for a
                       birthdate, if the time of birth is unknown.
```

The HL7 Standard strongly recommends that all systems routinely send the time zone offset but does not require it. All HL7 systems are required to accept the time zone offset, but its implementation is application specific. For many applications the time of interest is the local time of the sender. For example, an application in the Eastern Standard Time zone receiving notification of an admission that takes place at 11:00 PM in San Francisco on December 11 would prefer to treat the admission as having occurred on December 11 rather than advancing the date to December 12.

One exception to this rule would be a clinical system that processed patient data collected in a clinic and a nearby hospital that happens to be in a different time zone. Such applications may choose to convert the data to a common representation. Similar concerns apply to the transitions to and from daylight saving time. HL7 supports such requirements by requiring that the time zone information be present when the information is sent. It does not, however, specify which of the treatments discussed here will be applied by the receiving system.

XAD

Address

```
Components:  <street address (ST)> ^ <other designation (ST)> ^ <city (ST)> ^ <state or province (ST)> ^
             <zip or postal code(ST)> ^ <country (ID)> ^ < address type (ID)> ^ <other geographic
             designation (ST)>^ <county/parish code (IS)> ^ <census tract (IS)> ^ <address representation
             code (ID)>
```

Example:

```
|1234 Easy St.^Ste. 123^San Francisco^CA^95123^USA^B^^SF^^|
```

Street address (ST)

The street or mailing address of a person or institution.

Other designation (ST)

Second line of address. In general, it qualifies address. Examples: Suite 555 or Fourth Floor.

City (ST)

City address of a person or institution

State or province (ST)

State or province should be represented by the official postal service codes for that country.

Zip or postal code (ST)

Zip or postal codes should be represented by the official codes for that country. In the US, the zip code takes the form 99999[-9999], while the Canadian postal code takes the form A9A-9A9.

Country (ID)

Defines the country of the address. See Table 0212.

Address type (ID)

Address type is optional.

Other geographic designation (ST)

Other geographic designation includes country, bioregion, SMSA, etc.

County/parish code (IS)

A code that represents the county in which the specified address resides. Refer to *user-defined table 0289 - County/parish*. When this component is used to represent the county (or parish), component 8 "other geographic designation" should not duplicate it (i.e., the use of "other geographic designation" to represent the county is allowed only for the purpose of backward compatibility, and should be discouraged in this and future versions of HL7).

Census tract (IS)

An optional code that represents the census track in which the specified address resides. NESIIS does not store this value.

XCN

Extended Composite ID Number and Name for Persons

NESIIS uses this data type only to identify Provider Organizations that administer immunizations. See the field notes for segment RXA.

XPN

Extended Person Name

```
Components:  <family name (ST)> & <last name prefix (ST)> ^ <given name (ST)> ^ <middle initial or name
             (ST)> ^ <suffix (e.g., JR or III) (ST)> ^ <prefix (e.g., DR) (ST)> ^ <degree (e.g., MD) (ST)> ^
             <name type code (ID) > ^ <name representation code (ID)>
```

Example:

```
|Smith&St^John^J^III^DR^PHD^L|
```

Family name (ST)
Last Name Prefix (ST)
Given name (ST)
Middle initial or name (ST)

Suffix (ST)

Used to specify a name suffix (e.g., Jr. or III).

Prefix (ST)

Used to specify a name prefix (e.g., Dr.).

Degree (ST)

Used to specify an educational degree (e.g., MD).

Name type code (ID)

A code that represents the type of name. Refer to *HL7 table 0200 - Name type* for valid values.

Table 0200 - Name type

Value	Description
A	Alias Name
L	Legal Name
D	Display Name
M	Maiden Name
C	Adopted Name

Note:	The legal name is the same as the current married name.

Name representation code (ID)

This component can be used when names are represented in ideographic or non-alphabetic systems. NESIIS ignores this component.

XTN

Extended Telecommunication Number

```
Components:  [NNN] [(999)]999-9999 [X99999] [B99999] [C any text] ^ <telecommunication use code (ID)> ^
             <telecommunication equipment type (ID)> ^ <email address (ST)> ^ <country code (NM)> ^
             <area/city code (NM)> ^ <phone number (NM)> ^ <extension (NM)> ^ <any text (ST)>
```

Example:

```
(415)555-3210^ORN^FX^
```

[(999)] 999-9999 [X99999] [C any text]

Defined as the TN data type, except that the length of the country access code has been increased to three.

Telecommunication use code (ID)

A code that represents a specific use of a telecommunication number. Refer *to HL7 table 0201 - Telecommunication use code* for valid values.

Table 0201 - Telecommunication use code

Value	Description
PRN	Primary Residence Number
ORN	Other Residence Number
WPN	Work Number
VHN	Vacation Home Number
ASN	Answering Service Number
EMR	Emergency Number
NET	Network (email) Address
BPN	Beeper Number

Telecommunication equipment type (ID)

A code that represents the type of telecommunication equipment. Refer *to HL7 table 0202 - Telecommunication equipment type* for valid values. Table 0202 - Telecommunication equipment type

Value	Description
PH	Telephone
FX	Fax
MD	Modem
CP	Cellular Phone
BP	Beeper
Internet	Internet Address: Use Only If Telecommunication Use Code Is NET
X.400	X.400 email address: Use Only If Telecommunication Use Code Is NET

Email address (ST)
Country code (NM)
Area/city code (NM)
Phone number (NM)
Extension (NM)
Any text (ST)

Appendix B -- HL7 Tables

The following tables give valid values for fields in the segments defined above, in the cases where the field definitions reference an HL7 table number. The tables are considered part of the HL7 standard, but those tables designated as type User have values determined by NESIIS.

Type	Table	Name	Value	Description
HL7	0001	**Sex**		
	0001		F	Female
	0001		M	Male
	0001		U	Unknown
HL7	0003	**Event Type**		
	0003		A31	ADT/ACK - Update patient information
	0003		K11	RSP- Response to vaccination query (Real-Time)
	0003		Q11	QBP - Query for vaccination record (Real-Time)
	0003		V04	VXU - Unsolicited vaccination record update
HL7	0004	**Patient class**		
	0004		R	Recurring
HL7	0005	**Race**		
	0005		1002-5	American Indian or Alaska Native
	0005		2028-9	Asian
	0005		2076-8	Native Hawaiian or Other Pacific Islander
	0005		2054-5	Black or African-American
	0005		2106-3	White
	0005		2131-1	Other Race
	0005		Null	Unknown
HL7	0008	**Acknowledgment Code**		
	0008		AA	Application Accept
	0008		AE	Application Error
	0008		AR	Application Reject
User	0063	**Relationship**		
	0063		ASC	Associate
	0063		BRO	Brother
	0063		CGV	Care giver
	0063		CHD	Child
	0063		DEP	Handicapped dependent
	0063		DOM	Life partner
	0063		EMC	Emergency contact
	0063		EME	Employee
	0063		EMR	Employer
	0063		EXF	Extended family
	0063		FCH	Foster Child
	0063		FND	Friend
	0063		FTH	Father
	0063		GCH	Grandchild
	0063		GRD	Guardian
	0063		GRP	Grandparent
	0063		MGR	Manager
	0063		MTH	Mother
	0063		NCH	Natural child
	0063		NON	None
	0063		OAD	Other adult
	0063		OTH	Other
	0063		OWN	Owner
	0063		PAR	Parent
	0063		SCH	Stepchild

Type	Table	Name	Value		Description
	0063		SEL		Self
	0063		SIB		Sibling
	0063		SIS		Sister
	0063		SPO		Spouse
	0063		TRA		Trainer
	0063		UNK		Unknown
	0063		WRD		Ward of court
HL7	0064	**Financial class**			
	0064	Age: All	V00		VFC eligibility not determined/unknown
	0064	Age: All	V01		Not VFC eligible - Insured
	0064	Age: <19 yrs	V02		VFC eligible – Medicaid/Medicaid Managed Care
	0064	Age: <19 yrs	V03		VFC eligible – Uninsured
	0064	Age: <19 yrs	V04		VFC eligible – American Indian/Alaskan Native
	0064	Age: <19 yrs	V05		VFC eligible – Federally Qualified Health Center Patient (under-insured)
	0064	Age: >=19 yrs	V07		VFC eligible – Medicaid >19yrs
	0064	Age: >=19 yrs	NE02		Not VFC eligible – Local-specific eligibility 'Medicare'
	0064	Age: >=19 yrs	NE03		Not VFC eligible – Uninsured (Adult)
	0064	Age: >=19 yrs	NE04		Not VFC eligible – Underinsured (Adult)
HL7	0076	**Message Type**			
	0076		ACK		General acknowledgment message
	0076		ADT		ADT message
	0076		QBP		Query by parameter
	0076		RSP		Segment pattern response
	0076		VXU		Unsolicited vaccination record update
HL7	0085	**Observation result status codes**			
	0085		O		Order detail description only
HL7	0091	**Query Priority**			
	0091		I		Immediate
HL7	0103	**Processing ID**			
	0103		P		Production
HL7	0104	**Version ID**			
	0104		2.3.1		Release 2.3.1 1999
	0104		2.4		Release 2.4 2000
	0104		2.5.1		Release 2.5.1 April 2007
HL7	0125	**Constrained**			
	0125		CE		
	0125		NM		
	0125		ST		
	0125		DT		
	0125		ID		
	0125		TS		
HL7	0136	**Yes/No Indicator**			
	0136		Y		Yes
	0136		N		No
HL7	0155	**Accept/Application Acknowledgment Conditions**			
	0155		AL		Always
	0155		ER		Error/reject conditions only
	0155		NE		Never
HL7	0162	**Route of Administration**	HL7 0162	HL7 NCIT	
	0162		ID	C38238	Intradermal

Type	Table	Name	Value		Description
	0162		IM	C28161	Intramuscular
	0162		NS	C38284	Nasal
	0162		IV	C38276	Intravenous
	0162		PO	C38288	Oral
	0162		OTH		Other/Miscellaneous
	0162		SC	C38299	Subcutaneous
	0162		TD	C38305	Transdermal
	0162		MP	C38676	Percutaneous
HL7	0163	**Administrative Site**			
	0163		BN		Bilateral Naris
	0163		LT		Left Thigh
	0163		LA		Left Arm
	0163		LD		Left Deltoid
	0163		LG		Left Gluteus Medius
	0163		LVL		Left Vastus Lateralis
	0163		LLFA		Left Lower Forearm
	0163		RA		Right Arm
	0163		RT		Right Thigh
	0163		RVL		Right Vastus Lateralis
	0163		RG		Right Gluteus Medius
	0163		RD		Right Deltoid
	0163		RLFA		Right Lower Forearm
HL7	0189	**Ethnic Group**			
	0189		2135-2		Hispanic
	0189		2186-5		Non-Hispanic
	0189		Null		Unknown
HL7	0190	**Address Type**			
	0190		C		Current or temporary
	0190		P		Permanent
	0190		M		Mailing
	0190		B		Firm/Business
	0190		O		Other
	0190		H		Home
	0190		N		Birth (nee)
	0190		F		Country of Origin
	0190		L		Legal Address
	0190		BDL		Birth delivery location [use for birth facility]
	0190		BR		Residence at birth [use for residence at birth]
	0190		RH		Registry home
	0190		BA		Bad address
HL7	0200	**Name Type**			
	0200		A		Alias name
	0200		L		Legal name
	0200		D		Display name
	0200		M		Maiden name
	0200		C		Adopted name
	0200		B		Name at birth
	0200		P		Name of partner/spouse
	0200		U		Unspecified
HL7	0201	**Telecommunication use code**			
	0201		PRN		Primary residence number
	0201		ORN		Other residence number
	0201		WPN		Work number
	0201		VHN		Vacation home number

Type	Table	Name	Value	Description
	0201		ASN	Answering service number
	0201		EMR	Emergency number
	0201		NET	Network (e-mail) address
	0201		BPN	Beeper number
HL7	0202	**Telecommunication equipment type**		
	0202		PH	Telephone
	0202		FX	Fax
	0202		MD	Modem
	0202		CP	Cellular phone
	0202		BP	Beeper
	0202		Internet	Internet address: Use only if telecommunication use code is NET.
	0202		X.400	X.400 email address: Use only if telecommunication use code is NET.
	0202		TDD	Telecommunication Device for the Deaf
	0202		TTY	Teletypewriter
User	0203	**Identifier Type**		
	0203		ANON	Anonymous identifier
	0203		BR	Birth Registry Number
	0203		DL	Driver's License Number
	0203		HC	Health Card Number
	0203		LR	Local Registry ID
	0203		MA	Medicaid Number
	0203		MC	Medicare Number
	0203		MR	Medical Record Number
	0203		MRT	Temporary Medical Record Number
	0203		NH	National Health Plan Identifier
	0203		NI	National Unique Individual Identifier
	0203		PI	Patient Internal Identifier
	0203		PN	Person Number
	0203		PRN	Provider Number
	0203		PT	Patient External Identifier
	0203		RRI	Regional Registry ID
	0203		SR	State Registry Identifier
	0203		SS	Social Security Number
	0203		WC	WIC Identifier
User	0208	**Query Response Status**		
	0208		OK	Data found, no errors (this is the default)
	0208		NF	No data found, no errors
	0208		AE	Application error
	0208		AR	Application reject
	0208		TM	Too many candidates found
User	0212	**Nationality**		
	0212		CA	Canada
	0212		US	United States of America
User	0215	**Publicity Code**		
	0215		01	No reminder/recall
	0215		02	Yes reminder/recall – any method
	0215		03	Reminder/recall – no calls
	0215		04	Reminder only – any method
	0215		05	Reminder only – no calls
	0215		06	Recall only – any method
	0215		07	Recall only – no calls
	0215		08	Reminder/recall – to provider
	0215		09	Reminder to provider

Type	Table	Name	Value	Description
	0215		10	Only reminder to provider, no recall
	0215		11	Recall to provider
	0215		12	Only recall to provider, no reminder
HL7	0227	**Manufacturers of vaccines (code = MVX)**		
	0227		AB	Abbott
	0227		AD	Adams
	0227		AKR	Akorn, Inc
	0227		ALP	Alpha
	0227		AR	Armour (**Inactive** – use ZLB)
	0227		AVB	Aventis Behring (Inactive use ZLB)
	0227		AVI	Aviron
	0227		BA	Baxter (**Inactive** - use BAH)
	0227		BAH	Baxter Health Care
	0227		BAY	Bayer
	0227		BP	Berna **(Inactive** – use BPC)
	0227		BPC	Berna Products Corporation
	0227		BRR	Barr Labs, Inc.
	0227		CEN	Centeon L.L.C. (**Inactive** – use ZLB)
	0227		CHI	Chiron Corporation (**Inactive** – use NOV)
	0227		CMP	Celltech Medeva Pahm (**Inactive** – use NOV)
	0227		CNJ	Cangene Corporation
	0227		CON	Connaught **(Inactive** – use PMC)
	0227		CSL	bioCSL
	0227		DYN	DynPort Vaccine Company, LLC
	0227		EVN	Evans (**Inactive** – use NOV)
	0227		GRE	Greer
	0227		GRF	Grifols
	0227		IAG	Immuno International AG (**Inactive** – use BAH)
	0227		IDB	ID Biomedic
	0227		IM	Merieux (**Inactive** – Use PMC)
	0227		INT	Intercell Biomedical
	0227		IUS	Immuno-US
	0227		JPN	The Research foundation for Microbial Diseases of Osaka U.
	0227		KGC	Korea Green Cross
	0227		LED	Lederle (**Inactive** – use WAL)
	0227		MA	Massachusetts Public Health (**Inactive**-Use MBL)
	0227		MBL	Massachusetts Biologic Laboratories
	0227		MED	MedImmune
	0227		MIL	Miles (**Inactive** – use BAY)
	0227		MIP	Emergent BioDefense Operations Lansing
	0227		MSD	Merck
	0227		NAB	North American Biologicals, Inc.
	0027		NAV	North American Vaccine (**Inactive** – use BAH)
	0227		NYB	New York Blood Center
	0227		NOV	Novartis
	0227		NVX	Novavax, Inc
	0227		OTC	Organon Teknika
	0227		ORT	Ortho-Clinical Diagnostics
	0227		PD	Parkdale Pharmaceuticals (formerly Parke Davis)
	0227		PAX	PaxVax
	0227		PFR	Pfizer, Inc.
	0227		PMC	Sanofi Pasteur Inc. (Pasteur Merieux Connaught) Aventis Pasteur Inc. (formerly Pasteur Merieux Connaught) merged with and into Sanofi.

Type	Table	Name	Value	Description	
	0227		PRX	Praxis Biologics (**Inactive** – use WAL)	
	0227		PSC	Protein Sciences Corporation	
	0227		PWJ	Powderject Pharmaceutical	
	0227		SCL	Sclavo	
	0227		SEQ	Seqirus	
	0227		SOL	Solvay Pharmaceuticals	
	0227		SKB	GlaxoSmithKline	
	0227		SI	Swiss Serum and Vaccine Inst. (**Inactive** – use BPC)	
	0227		TAL	Talecris Biotherapeutics (includes Bayer Biologicals)	
	0227		USA	United States Army Medical Research	
	0227		VAL	Valneva	
	0227		VXG	VaxGen	
	0227		WA	Wyeth-Ayerst (**Inactive** – use WAL)	
	0227		WAL	Wyeth-Ayerst (**Inactive** – use PFR)	
	0227		ZLB	ZLB Behring (includes Aventis Behring and Armour Pharmaceutical Co)	
	0227		OTH	Other	
	0227		UNK	Unknown manufacturer	
User	0289	**County/parish (Nebraska & some surrounding counties)**			
	0289	*Nebraska Counties*	NE001	Nebraska	Adams
	0289		NE003	Nebraska	Antelope
	0289		NE005	Nebraska	Arthur
	0289		NE007	Nebraska	Banner
	0289		NE009	Nebraska	Blaine
	0289		NE011	Nebraska	Boone
	0289		NE013	Nebraska	Box Butte
	0289		NE015	Nebraska	Boyd
	0289		NE017	Nebraska	Brown
	0289		NE019	Nebraska	Buffalo
	0289		NE021	Nebraska	Burt
	0289		NE023	Nebraska	Butler
	0289		NE025	Nebraska	Cass
	0289		NE027	Nebraska	Cedar
	0289		NE029	Nebraska	Chase
	0289		NE031	Nebraska	Cherry
	0289		NE033	Nebraska	Cheyenne
	0289		NE035	Nebraska	Clay
	0289		NE037	Nebraska	Colfax
	0289		NE039	Nebraska	Cuming
	0289		NE041	Nebraska	Custer
	0289		NE043	Nebraska	Dakota
	0289		NE045	Nebraska	Dawes
	0289		NE047	Nebraska	Dawson
	0289		NE049	Nebraska	Deuel
	0289		NE051	Nebraska	Dixon
	0289		NE053	Nebraska	Dodge
	0289		NE055	Nebraska	Douglas
	0289		NE057	Nebraska	Dundy
	0289		NE059	Nebraska	Fillmore
	0289		NE061	Nebraska	Franklin
	0289		NE063	Nebraska	Frontier
	0289		NE065	Nebraska	Furnas
	0289		NE067	Nebraska	Gage

Type	Table	Name	Value	Description	
	0289		NE069	Nebraska	Garden
	0289		NE071	Nebraska	Garfield
	0289		NE073	Nebraska	Gosper
	0289		NE075	Nebraska	Grant
	0289		NE077	Nebraska	Greeley
	0289		NE079	Nebraska	Hall
	0289		NE081	Nebraska	Hamilton
	0289		NE083	Nebraska	Harlan
	0289		NE085	Nebraska	Hayes
	0289		NE087	Nebraska	Hitchcock
	0289		NE089	Nebraska	Holt
	0289		NE091	Nebraska	Hooker
	0289		NE093	Nebraska	Howard
	0289		NE095	Nebraska	Jefferson
	0289		NE097	Nebraska	Johnson
	0289		NE099	Nebraska	Kearney
	0289		NE101	Nebraska	Keith
	0289		NE103	Nebraska	Keya Paha
	0289		NE105	Nebraska	Kimball
	0289		NE107	Nebraska	Knox
	0289		NE109	Nebraska	Lancaster
	0289		NE111	Nebraska	Lincoln
	0289		NE113	Nebraska	Logan
	0289		NE115	Nebraska	Loup
	0289		NE117	Nebraska	McPherson
	0289		NE119	Nebraska	Madison
	0289		NE121	Nebraska	Merrick
	0289		NE123	Nebraska	Morrill
	0289		NE125	Nebraska	Nance
	0289		NE127	Nebraska	Nemaha
	0289		NE129	Nebraska	Nuckolls
	0289		NE131	Nebraska	Otoe
	0289		NE133	Nebraska	Pawnee
	0289		NE135	Nebraska	Perkins
	0289		NE137	Nebraska	Phelps
	0289		NE139	Nebraska	Pierce
	0289		NE141	Nebraska	Platte
	0289		NE143	Nebraska	Polk
	0289		NE145	Nebraska	Red Willow
	0289		NE147	Nebraska	Richardson
	0289		NE149	Nebraska	Rock
	0289		NE151	Nebraska	Saline
	0289		NE153	Nebraska	Sarpy
	0289		NE155	Nebraska	Saunders
	0289		NE157	Nebraska	Scotts Bluff
	0289		NE159	Nebraska	Seward
	0289		NE161	Nebraska	Sheridan
	0289		NE163	Nebraska	Sherman
	0289		NE165	Nebraska	Sioux
	0289		NE167	Nebraska	Stanton
	0289		NE169	Nebraska	Thayer
	0289		NE171	Nebraska	Thomas
	0289		NE173	Nebraska	Thurston
	0289		NE175	Nebraska	Valley
	0289		NE177	Nebraska	Washington

Type	Table	Name	Value	Description	
	0289		NE179	Nebraska	Wayne
	0289		NE181	Nebraska	Webster
	0289		NE183	Nebraska	Wheeler
	0289		NE185	Nebraska	York
	0289		CO075	Colorado	Logan
	0289		CO095	Colorado	Phillips
	0289		CO115	Colorado	Sedgwick
	0289		CO123	Colorado	Weld
	0289		CO125	Colorado	Yuma
	0289		IA071	Iowa	Fremont
	0289		IA085	Iowa	Harrison
	0289		IA129	Iowa	Mills
	0289		IA133	Iowa	Monona
	0289		IA149	Iowa	Plymouth
	0289		IA155	Iowa	Pottawattamie
	0289		IA193	Iowa	Woodbury
	0289		KS013	Kansas	Brown
	0289		KS023	Kansas	Cheyenne
	0289		KS039	Kansas	Decatur
	0289		KS089	Kansas	Jewell
	0289		KS117	Kansas	Marshall
	0289		KS123	Kansas	Mitchell
	0289		KS131	Kansas	Nemaha
	0289		KS137	Kansas	Norton
	0289		KS147	Kansas	Phillips
	0289		KS153	Kansas	Rawlins
	0289		KS157	Kansas	Republic
	0289		KS183	Kansas	Smith
	0289		KS201	Kansas	Washington
	0289		MO005	Missouri	Atchison
	0289		MO087	Missouri	Holt
	0289		SD007	South Dakota	Bennett
	0289		SD009	South Dakota	Bon Homme
	0289		SD023	South Dakota	Charles Mix
	0289		SD027	South Dakota	Clay
	0289		SD047	South Dakota	Fall River
	0289		SD053	South Dakota	Gregory
	0289		SD099	South Dakota	Minnehaha
	0289		SD113	South Dakota	Shannon
	0289		SD121	South Dakota	Todd
	0289		SD123	South Dakota	Tripp
	0289		SD135	South Dakota	Yankton
	0289		WY015	Wyoming	Goshen
	0289		WY021	Wyoming	Laramie
	0289		WY025	Wyoming	Natrona
	0289		WY027	Wyoming	Niobrara
	0289		WY031	Wyoming	Platte
HL7	0322	**Completion status**			
	0322		CP	Complete	
	0322		RE	Refused	
	0322		NA	Not administered	
	0322		PA	Partially administered	
HL7	0323	**Action code**			
	0323		A	Add	
	0323		D	Delete	
	0323		U	Update	

Type	Table	Name	Value	Description
HL7	0354	**Message Structure**		
	0354		ACK	ACK for all Trigger Events
	0354		QBP_Q11	QBP for Q11 Trigger Event
	0354		RSP_K11	RSP for K11 Trigger Event
	0354		VXU_V04	VXU for V04 Trigger Event
HL7	0357	**Message Error Condition Codes**		
	0357	Error Status Codes	100	Segment sequence error
	0357		101	Required field missing
	0357		102	Data type error
	0357		103	Table value not found
	0357	Rejection Status Codes	200	Unsupported message type
	0357		201	Unsupported event type
	0357		202	Unsupported processing ID
	0357		203	Unsupported version ID
	0357	Status Code	207	Application internal error
User	0363	**Assigning Authority**		
	0363		AKA	Alaska
	0363		ALA	Alabama
	0363		ARA	Arkansas
	0363		ASA	American Samoa
	0363		AZA	Arizona
	0363		BAA	New York City
	0363		CAA	California
	0363		CHA	Chicago
	0363		COA	Colorado
	0363		CTA	Connecticut
	0363		DCA	District of Columbia
	0363		DEA	Delaware
	0363		FLA	Florida
	0363		FMA	Fed States Micro
	0363		GAA	Georgia
	0363		GUA	Guam
	0363		HIA	Hawaii
	0363		IAA	Iowa
	0363		IDA	Idaho
	0363		ILA	Illinois
	0363		INA	Indiana
	0363		KSA	Kansas
	0363		KYA	Kentucky
	0363		LAA	Louisiana
	0363		MAA	Massachusetts
	0363		MDA	Maryland
	0363		MEA	Maine
	0363		MHA	Rep Mars Islands
	0363		MIA	Michigan
	0363		MNA	Minnesota
	0363		MOA	Missouri
	0363		MPA	No. Mariana Islands
	0363		MSA	Mississippi
	0363		MTA	Montana
	0363		NCA	North Carolina
	0363		NDA	North Dakota
	0363		NEA	Nebraska
	0363		NHA	New Hampshire

Type	Table	Name	Value	Description
	0363		NJA	New Jersey
	0363		NMA	New Mexico
	0363		NVA	Nevada
	0363		NYA	New York State
	0363		OHA	Ohio
	0363		OKA	Oklahoma
	0363		ORA	Oregon
	0363		PAA	Pennsylvania
	0363		PHA	Philadelphia
	0363		PRA	Puerto Rico
	0363		RIA	Rhode Island
	0363		RPA	Republic Palau
	0363		SCA	South Carolina
	0363		SDA	South Dakota
	0363		TBA	San Antonio
	0363		THA	Houston
	0363		TNA	Tennessee
	0363		TXA	Texas
	0363		UTA	Utah
	0363		VAA	Virginia
	0363		VIA	Virgin Islands
	0363		VTA	Vermont
	0363		WAA	Washington
	0363		WIA	Wisconsin
	0363		WVA	West Virginia
	0363		WYA	Wyoming
User	0441	**Immunization registry status**		
	0441		A	Active
	0441		I	Inactive - unspecified
	0441		L	Inactive – Lost to follow-up (cannot contact)
	0441		M	Inactive – Moved or gone elsewhere (transferred)
	0441		P	Inactive – Permanently inactive (do not reactivate or add new entries to this record
	0441		U	Unknown
HL7	0516	**Error Severity**		
	0516		I	Information
	0516		W	Warning
	0516		E	Error
User	0533	**Application Error Code**		
	0533		1	Illogical Date error
	0533		2	Invalid Date
	0533		3	Illogical Value error
	0533		4	Invalid value
	0533		5	Table value not found
	0533		6	Required observation missing
NIP	NIP001	**Immunization Information Source**		
	NIP001		00	New Immunization Record
	NIP001		01	Historical Information
	NIP001		02	Historical information – from other provider
	NIP001		03	Historical information – from parent's written record
	NIP001		04	Historical information – from parent's recall
	NIP001		05	Historical information – from other registry
	NIP001		06	Historical information – from birth certificate
	NIP001		07	Historical information – from school record

Type	Table	Name	Value	Description
	NIP001		08	Historical information – from public agency
NIP	NIP002	**Substance Refusal Reason**		
	NIP002		00	Parental decision
	NIP002		01	Religious exemption
	NIP002		02	Other (must add text component of the CE field with description)
	NIP002		03	Patient decision
NIP	NIP004	**Contraindications, Precautions**		Note: This table has been replaced by separate tables for contraindications, indications, reactions, and immunities
	NIP004		MA	Physician documented exemption due to medical reasons for DTP/aP vaccine group
	NIP004		MB	Physician documented exemption due to medical reasons for Pediatric DT vaccine
	NIP004		MC	Physician documented exemption due to medical reasons for Hepatitis A vaccine group
	NIP004		MD	Physician documented exemption due to medical reasons for Hepatitis B vaccine group
	NIP004		ME	Physician documented exemption due to medical reasons for Hib vaccine group
	NIP004		MF	Physician documented exemption due to medical reasons for MMR vaccine group
	NIP004		MG	Physician documented exemption due to medical reasons for Meningococcal vaccine group
	NIP004		MH	Physician documented exemption due to medical reasons for Pneumococcal vaccine group
	NIP004		MI	Physician documented exemption due to medical reasons for Polio vaccine group
	NIP004		MJ	Physician documented exemption due to medical reasons for Rotavirus vaccine group
	NIP004		MK	Physician documented exemption due to medical reasons for Adult Td vaccine group
	NIP004		ML	Physician documented exemption due to medical reasons for Varicella vaccine group
	NIP004		RABEXP	Client has been exposed to Rabies
	NIP004		P1	Refusal of DT
	NIP004		P2	Refusal of DTaP
	NIP004		P3	Refusal of HepB
	NIP004		P4	Refusal of Hib
	NIP004		P5	Refusal of MMR
	NIP004		P6	Refusal of Pneumococcal
	NIP004		P7	Refusal of Polio
	NIP004		P8	Refusal of TD
	NIP004		P9	Refusal of Varicella
	NIP004		PB	Refusal of HepA
	NIP004		PC	Refusal of Influenza
	NIP004		PD	Refusal of Meningococcal
	NIP004		PE	Refusal of Rotavirus
	NIP004		PF	Refusal of HPV
	NIP004		PG	Refusal of Pertussis
	NIP004		PJ	Refusal of Novel Influenza-09
	NIP004		PK	Refusal of Zoster
	NIP004		PM	Refusal of MeningB
	NIP004		PS	Refusal of Smallpox
	NIP004		PT	Refusal of Tdap
	NIP004		R1	Clinician has decided to repeat the DTAP series
	NIP004		R2	Clinician has decided to repeat the Hep B series
	NIP004		R3	Clinician has decided to repeat the HIB series
	NIP004		R4	Clinician has decided to repeat the Polio series
	NIP004		R5	Clinician has decided to repeat the MMR series
	NIP004		R6	Clinician has decided to repeat the Pneumococcal series
	NIP004		R7	Clinician has decided to repeat the Varicella series

Type	Table	Name	Value	Description
	NIP004		R8	Clinician has decided to repeat the Meningococcal series
	NIP004		R9	Clinician has decided to repeat the HepA series
	NIP004		RX	Clinician has decided to repeat the Influenza series
NIP	NIP005	**Event Consequence**		
	NIP005		D	Patient Died
	NIP005		L	Life threatening illness
	NIP005		E	Required emergency room/doctor visit
	NIP005		H	Required hospitalization
	NIP005		P	Resulted in prolongation of hospitalization
	NIP005		J	Resulted in permanent disability
NIP	NIP006	**Patient Registry Status**		
	NIP006		A	Active
	NIP006		N	Inactive
	NIP006		M	Moved or Gone Elsewhere (In NESIIS used for Moved out of State)
	NIP006		P	Permanently inactive - deceased
NIP	NIP008	**Vaccine Funding Code**	PVF	Private funds
	NIP008		PBF	Public funds

	V2.5.1 Coding System	**V2.5.1 Value**	V2.3.1 NIP004 Value	Description
HL7	0396	**Vaccine Contraindications**		
	CDCPHINVS	VXC18	03	Allergy to baker's yeast (anaphylactic)
	SCT	91930004	04	Allergy to egg ingestion (anaphylactic)
	SCT	294847001	05	Allergy to gelatin (anaphylactic)
	SCT	300916003	LA	Allergy to latex
	SCT	294468006	06	Allergy to neomycin (anaphylactic) - MMR IPV VZV
	SCT	294466005	07	Allergy to streptomycin (anaphylactic)
	CDCPHINVS	VXC19	08	Allergy to thimerosal (anaphylactic)
	CDCPHINVS	VXC20	09	Allergy to previous dose of this vaccine or to any of its unlisted vaccine components (anaphylactic)
	NIP004	14	14	Current diarrhea, moderate to severe
	CDCPHINVS	VXC22	15	Encephalopathy within 7 days of previous dose of DTP
	CDCPHINVS	VXC23	16	Current fever with moderate-to-severe illness
	NIP004	18	18	Gullain-Barre syndrome (GBS) within 6 weeks of previous dose of DTP/DTaP
	CDCPHINVS	VXC24	21	Current acute illness, moderate to severe (with or without fever) (e.g. diarrhea, otitis media, vomiting)
	CDCPHINVS	27624003	22	Chronic illness (e.g. chronic gastrointestinal disease)
	NIP004	23	23	Immune globulin (IG) administration, recent or simultaneous
	NIP004	34	34	Immunodeficiency (family history)
	NIP004	35	35	Immunodeficiency (household contact)
	CDCPHINVS	VXC27	36	Immunodeficiency (hematologic and solid tumors, congenital immunodeficiency, long-term immunosuppressive therapy, including steroids) (in recipient)
	CDCPHINVS	VXC26	37	Neurologic disorders, underlying (including seizure disorders, cerebral palsy, and developmental delay)
	NIP004	38	38	Otitis media (ear infection) moderate to severe (with or without fever)

	V2.5.1 Coding System	V2.5.1 Value	V2.3.1 NIP004 Value	Description
	SCT	77386006	39	Pregnancy (in recipient)
	SCT	302215000	40	Thrombocytopenia
	SCT	161461006	41	Thrombocytopenic purpura (history)
	CDCPHINVS	VXC21	61	Previous history of intussusception
	CDCPHINVS	VXC25	62	History of Arthus hypersensitivity reaction to a tetanus-containing vaccine administered < 10 yrs previously
	NIP004	CP	CP	Pertussis contraindication and precautions
	NIP004	CT	CT	Tetanus contraindication – allergic reaction
HL7	**0396**	**Evidence of Immunity**		
	SCT	397428000	24	History/immunity: diphtheria
	SCT	91428005	25	History/immunity: HIB
	SCT	40468003	HEPA_I	History/immunity: Hepatitis A
	SCT	66071002	26	History/immunity: Hepatitis B
	SCT	14189004	27	History/immunity: measles
	SCT	36989005	28	History/immunity: mumps
	SCT	27836007	29	History/immunity: pertussis
	SCT	398102009	30	History/immunity: poliovirus
	SCT	36653000	31	History/immunity: rubella
	SCT	76902006	32	History/immunity: tetanus
	SCT	38907003	33	History/immunity: varicella
	SCT	409498004	57	History/immunity: anthrax
	SCT	240532009	80	History/immunity: HPV
	SCT	6142004	60	History/immunity: influenza
	SCT	52947006	59	History/immunity: Japanese encephalitis
	SCT	23511006	54	History/immunity: meningococcal
	SCT	16814004	81	History/immunity: pneumococcal
	SCT	14168008	75	History/immunity: rabies
	SCT	18624000	53	History/immunity: rotavirus
	SCT	4834000	58	History/immunity: typhoid
	SCT	111852003	50	History/immunity: vaccinia
	SCT	16541001	51	History/immunity: yellow fever
HL7	**0396**	**Serological Evidence of Immunity**		
	SCT	278971009	HEPA_I	History/immunity: Hepatitis A
	SCT	271511000	26	History/immunity: Hepatitis B
	SCT	371111005	27	History/immunity: measles
	SCT	341112003	28	History/immunity: mumps
	SCT	278968001	31	History/immunity: rubella
	SCT	371113008	33	History/immunity: varicella
HL7	0396	**Reaction Codes**		
	NESIIS001	ERVISIT	ERVISIT	Required emergency room/doctor visit
	SCT	39579001	ANAPH	Anaphylaxis
	CDPHINVS	VXC10	HYPOTON	Hypotonic-hyporesponsive collapse within 48 hours of immunization
	CDPHINVS	VXC11	SEIZURE	Seizure occurring within 3 days
	CDPHINVS	VXC9	CRYING	Persistent crying lasting >= 3 hours within 48 hours of immunization
	CDPHINVS	VXC12	FEVER105	Temperature >= 105 (40.5 C) within 48 hours of immunization

Type	Table	Name	Value	Description
NESIIS	WVGC	**Vaccine Group Code (WVGC)**		
	WVGC		Adeno	Adeno
	WVGC		Anthrax	Anthrax

Type	Table	Name	Value	Description
	WVGC		BCG	BCG
	WVGC		Cholera	Cholera
	WVGC		Diphtheria	Diphtheria Antitoxin
	WVGC		DTP/aP	Diphtheria, Tetanus, Acellular Pertussis (< 7 years old)
	WVGC		Encephalitis	Encephalitis
	WVGC		Flu H1N1-09	Novel Influenza-H1N1-09
	WVGC		H5N1 flu	H5N1 flu
	WVGC		HepA	Hepatitis A
	WVGC		HepB	Hepatitis B
	WVGC		Hib	Hib
	WVGC		HPV	Human Papilloma Virus
	WVGC		Ig	Ig
	WVGC		Influenza	Influenza
	WVGC		Lyme	Lyme
	WVGC		Measles	Measles Virus Vaccine
	WVGC		MMR	Measles, Mumps, Rubella
	WVGC		Meningo	Meningitis
	WVGC		MeningB	Meningococcal B
	WVGC		Mumps	Mumps Virus Vaccine
	WVGC		Pertussis	Pertussis
	WVGC		Plague	Plague
	WVGC		Pneumococcal	Pneumonia Conjugate
	WVGC		Pneumo-Poly	Pneumonia Polysaccharide
	WVGC		Polio	Poliomyelitis
	WVGC		Rabies	Rabies
	WVGC		Rotavirus	Rotavirus
	WVGC		Rubella	Rubella Virus Vaccine
	WVGC		Tetanus	Tetanus
	WVGC		Td	Tetanus Diphtheria
	WVGC		Tdap	Diphtheria, Tetanus, Acellular Pertussis (=> 7 years old)
	WVGC		Typhoid	Typhoid
	WVGC		Smallpox	Vaccinia
	WVGC		Varicella	Varicella
	WVGC		Yellow Fever	Yellow Fever
	WVGC		Zoster	Zoster
NESIIS	WVTN	**Vaccine Trade Name (WVTN)**		
	WVTN		ACAM2000	Vaccinia (smallpox)
	WVTN		Acel-Imune	DTaP
	WVTN		ActHib	Hib (PRP-T)
	WVTN		Adacel	TdaP > 7 years
	WVTN		Adeno T4	Adenovirus, type 4
	WVTN		Adeno T7	Adenovirus, type 7
	WVTN		Adenovirus types 4 and 7	Adenovirus types 4 and 7
	WVTN		Afluria	Influenza, seasonal, injectable
	WVTN		Afluria Quad, P-free	Influenza, inject, quadrivalent, p-free
	WVTN		Afluria Quadrivalent	Influenza, injectable, quadrivalent
	WVTN		Afluria, P-free	Influenza, seasonal, P-free
	WVTN		Agriflu, P-free	Influenza, seasonal, P-free
	WVTN		Biothrax	Anthrax
	WVTN		Attenuvax	Measles
	WVTN		BabyBIG	Botulism
	WVTN		BayTet	TIg
	WVTN		BCG-Cancer	BCG-BC

Type	Table	Name	Value	Description
	WVTN		BCG-TB	BCG-TB
	WVTN		BEXSERO	Meningococcal B, OMV
	WVTN		Biavax II	Rubella-Mumps
	WVTN		BIG	Botulism
	WVTN		Boostrix	TdaP > 7 years
	WVTN		Botulinum-antitoxin	Botulinum-antitoxin
	WVTN		Botulism	Botulism
	WVTN		Certiva	DTaP
	WVTN		Cervarix	HPV, Bivalent
	~~WVTN~~		~~Cholera-I~~	~~Cholera-Inject~~
	~~WVTN~~		~~Cholera-O~~	~~Cholera-Oral~~
	WVTN		CMV-IgIV	CMV-IgIV
	WVTN		Comvax	Hib-Hep B
	WVTN		DAPTACEL	DTaP,5 pertussis antigens
	WVTN		DECAVAC	Td (adult) preservative free
	WVTN		Diphtheria	Diphtheria
	WVTN		Diphtheria-antitoxin	Diphtheria-antitoxin
	WVTN		Dryvax	Vaccinia (smallpox)
	WVTN		DT(GENERIC)	DT (pediatric)
	WVTN		DTP	DTP
	WVTN		Engerix-B Adult	Hep B, adult
	WVTN		Engerix-B dialysis	Hep B, dialysis 4 dose
	WVTN		Engerix-B Peds	Hep B, adolescent or pediatric
	WVTN		Flebogamma	IgIV
	WVTN		Flu-Imune	Influenza, seasonal, injectable
	WVTN		Flu-Shield	Influenza, seasonal, injectable
	WVTN		Fluad	Influenza, trivalent, adjuvanted
	WVTN		Fluarix, P-free	Influenza, seasonal, P-free
	WVTN		Fluarix, Quad, P-free	Influenza, inject, quadrivalent, p-free
	WVTN		Flublok	Influenza, recombinant, inject, p-free
	WVTN		Flucelvax	Influenza, injectable, MDCK, p-free
	WVTN		Flucelvax Quadrivalent	Influenza, inject, MDCK, quad, p-free
	WVTN		FluLaval	Influenza, seasonal, injectable
	WVTN		Flulaval, P-free	Influenza, seasonal, P-free
	WVTN		Flulaval Quadrivalent	Influenza, injectable, quadrivalent
	WVTN		Flulaval Quad, P-free	Influenza, inject, quadrivalent, p-free
	WVTN		FluMist	Influenza, seasonal, live, intranasal
	WVTN		FluMist Quadrivalent	Influenza, live, nasal, quadrivalent
	WVTN		Fluogen	Influenza, seasonal, injectable
	WVTN		Fluvirin	Influenza, seasonal, injectable
	WVTN		Fluvirin, P-free	Influenza, seasonal, P-free
	WVTN		Fluzone	Influenza, seasonal, injectable
	WVTN		Fluzone, P-free	Influenza, seasonal, P-free
	WVTN		Fluzone High-Dose P-free	Influenza , seasonal, High-Dose, P-free
	WVTN		Fluzone Intraderm P-free	Influenza, seasonal, intradermal, P-free
	WVTN		Fluzone Quad, P-free	Influenza, inject, quadrivalent, p-free
	WVTN		Fluzone Quad Peds P-free	Influenza, inject, quad, peds, p-free
	WVTN		Fluzone Quad Intradermal	Influenza, intradermal, quad, p-free
	WVTN		Fluzone Quadrivalent	Influenza, injectable, quadrivalent
	WVTN		Gardasil	HPV, Quadrivalent
	WVTN		Gardasil 9	Human Papillomavirus 9-valent vaccine
	WVTN		H1N1 Flu-Mist	Novel Influenza-H1N1-09, nasal
	WVTN		H1N1 Afluria	Novel Influenza-H1N1-09
	WVTN		H1N1 Afluria, P-free	Novel Influenza-H1N1-09, preserve-free
	WVTN		H1N1 Fluvirin	Novel Influenza-H1N1-09

Type	Table	Name	Value	Description
	WVTN		H1N1 Fluvirin, P-free	Novel Influenza-H1N1-09, preserve-free
	WVTN		H1N1 Fluzone	Novel Influenza-H1N1-09
	WVTN		H1N1 Fluzone, P-free	Novel Influenza-H1N1-09, preserve-free
	WVTN		Havrix-Adult	Hep A, adult
	WVTN		Havrix-Peds 2 Dose	Hep A, ped/adol, 2 dose
	WVTN		Havrix-Peds 3 Dose	Hep A, ped/adol, 3 dose
	WVTN		HBIg	HBIg
	WVTN		Hib-TITER	Hib (HbOC)
	WVTN		Hiberix	Hib (PRP-T)
	WVTN		HyperRAB S/D	RIg-HT
	WVTN		Ig	Ig
	WVTN		IgIV	IgIV
	WVTN		Imogam Rabies - HT	RIg-HT
	WVTN		Imovax ID	Rabies, intradermal injection
	WVTN		Imovax	Rabies, intramuscular injection
	WVTN		Infanrix	DTaP
	WVTN		Influenza A (H5N1) -2013	Influenza A (H5N1), ADJUVANTED-2013
	WVTN		IPOL	Polio-Inject
	WVTN		Ixiaro	Japanese encephalitis-IM
	WVTN		JE-Vax	Japanese encephalitis-SC
	WVTN		Kinrix	DTaP-IPV
	WVTN		LYMErix	Lyme
	WVTN		M-R-VAX	Measles-Rubella
	WVTN		Measles	Measles
	WVTN		Measles-Rubella (MERU)	Measles-Rubella
	WVTN		Menactra	Meningococcal (MCV4P)
	WVTN		Menhibrix	Meningococcal C/Y-Hib PRP
	WVTN		MENOMUNE	Meningococcal (MPSV4)
	WVTN		Menveo	Meningococcal (MCV4O)
	WVTN		Meruvax II	Rubella
	WVTN		MMR II	MMR
	WVTN		MMRV	MMRV
	WVTN		Mumps	Mumps
	WVTN		Mumps-Rubella (MURU)	Rubella-Mumps
	WVTN		Mumpsvax	Mumps
	WVTN		MYCOBAX	MYCOBAX
	WVTN		OmniHib	Hib (PRP-T)
	WVTN		ORIMUNE	Polio-Oral
	WVTN		Pediarix	DTaP-Hep B-IPV
	WVTN		PedvaxHIB	Hib (PRP-OMP)
	WVTN		Pentacel	DtaP-Hib-IPV
	WVTN		Pertussis	Pertussis
	WVTN		Plague	Plague
	WVTN		Pneumovax 23	Pneumococcal polysaccharide PPV23
	WVTN		PNU-IMUNE 23	Pneumococcal polysaccharide PPV23
	WVTN		Prevnar 7	Pneumo-Conjugate
	WVTN		Prevnar 13	Pneumococcal conjugate PCV 13
	WVTN		ProHIBit	Hib (PRP-D)
	WVTN		Proquad	MMRV
	WVTN		Quadracel	DTaP-IPV
	WVTN		RabAvert	Rabies, intramuscular injection
	WVTN		Recombivax Peds	Hep B, adolescent or pediatric
	WVTN		Recombivax-Adult	Hep B, adult
	WVTN		Recombivax-Dialysis	Hep B, dialysis 4 dose
	WVTN		Rho(D)Full	Rho(D)Full

Type	Table	Name	Value	Description
	WVTN		Rho(D)IV	Rho(D)IV
	WVTN		Rho(D)Mini	Rho(D)Mini
	WVTN		RIg	RIg
	WVTN		RIg-HT	RIg-HT
	WVTN		RotaShield	Rotavirus, tetravalent
	WVTN		RotaTeq	Rotavirus, pentavalent
	WVTN		Rotarix	Rotavirus, monovalent
	WVTN		RSV-IgIM	RSV-IgIM
	WVTN		RSV-IgIV	RSV-IgIV
	WVTN		Rubella	Rubella
	WVTN		Td(GENERIC)	Td (adult), absorbed
	WVTN		Td, (adult)	Td, (adult)
	WVTN		Td, adsorbed	Td (adult) preservative free
	WVTN		TENIVAC	Td (adult) preservative free
	WVTN		Tetramune	DTP-Hib
	WVTN		TICE BCG	TICE BCG
	WVTN		TIg	TIg
	WVTN		TriHIBit	DTaP-Hib
	WVTN		Tripedia	DTaP
	WVTN		Trumenba	Meningococcal B, recombinant
	WVTN		TT	Tetanus
	WVTN		Twinrix	HepA-HepB Adult
	WVTN		Typhim Vi	Typhoid-ViCPs
	WVTN		Typhoid	Typhoid, parenteral
	WVTN		Typhoid-AKD	Typhoid-AKD
	WVTN		Vaccinia (smallpox), diluted	Vaccinia (smallpox), diluted
	WVTN		Vaccinia immune globulin VIG	Vaccinia immune globulin VIG
	WVTN		VAQTA-Adult	Hep A, adult
	WVTN		VAQTA-Peds 2 Dose	HepA-Ped 2 Dose
	WVTN		Varivax	Varicella
	WVTN		Vaxchora	Cholera, live attenuated
	WVTN		Vivotif	Typhoid,oral
	WVTN		VZIg	VZIg
	WVTN		YF-VAX	Yellow Fever
	WVTN		Zostavax	Zoster (shingles), live

CPT Codes (WCPT) and CVX Codes (292)

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
90476	54	Adeno	Adenovirus, type 4	Adeno T4	Adenovirus type 4, live oral	WAL
90477	55		Adenovirus, type 7	Adeno T7	Adenovirus type 7, live oral	WAL
	143		Adenovirus type 4 and 7	Adenovirus types 4 and 7	Adenovirus, type 4 and type 7, live, oral	BRR
	82		Adeno, unspecified formulation		Adenovirus vaccine, unspecified formulation Used to be recorded as CVX 55, not recorded as CVX 82	
90581	24	Anthrax	Anthrax	Biothax	Anthrax	MIP
90585	19	BCG	BCG-TB	BCG-TB	Bacillus Calmette-Guerin TB	OTC
90586			BCG-BC	BCG-BC	Bacillus Calmette-Guerin bladder cancer	OTC
90728			BCG, unspecified formulation		BCG, unspecified formulation	
	173	Cholera	Cholera, BivWC		Cholera, BivWC	
90725			Cholera-Inject	Cholera-I	Cholera-Inject	
90625	174		Cholera, live attenuated	Vaxchora	Cholera, live attenuated	PAX
	26		Cholera, unspecified formulation		Cholera, unspecified formulation	
	172		Cholera, WC-rBS		Cholera, WC-rBS	
90719		Diphtheria	Diphtheria	Diphtheria	Diphtheria toxoid, intramuscular use	PD
90700	20	DTP/aP	DTaP	Acel-Imune	Diphtheria, tetanus, acellular pertussis	WAL
				Certiva		BAH
				Infanrix		SKB
				Tripedia		PMC
90701	01		DTP	DTP	Diphtheria, tetanus, whole cell pertussis	PMC
90702	28		DT (pediatric)	DT	Diphtheria tetanus pediatric	PMC
90720	22		DTP-Hib	Tetramune	DTP – Hib combination	WAL
90721	50		DTaP-Hib	TriHIBit	DTaP-Hib combination	PMC
90723	110		DTaP-Hep B-IPV	Pediarix	DTaP-HepB-Polio combination	SKB
90698	120		DTaP-Hib-IPV	Pentacel	DTaP-Hib-IPV combination	PMC
90696	130		DTaP-IPV	Kinrix	DTaP-IPV combination	SKB
				Quadracel	DTaP-IPV combination	PMC
90700	106		DTAP, 5 pertussis antigens	DAPTACEL	Diphtheria, tetanus, acellular pertussis, 5 antigens	PMC
	107		DTaP, unspecified formulation		DTaP, unspecified formulation	
	102		DTP-HIB-HepB		DTP-HIB-Hep B vaccine	
	132		DTaP-IPV-HIB-HEP B, historical		DTaP-IPV-HIB-HEP B, historical	
	170		DTAP/IPV/HIB - non-US		DTAP/IPV/HIB - non-US	
90664	125	Flu H1N1-09	Novel Influenza-H1N1-09, nasal	H1N1 Flu-Mist	Influenza virus vaccine, pandemic formulation, live, for intranasal use	MED
90666	126		Novel Influenza-H1N1-09, preserve-free	H1N1 Afluria, P-free	Influenza virus vaccine, pandemic formulation, split-virus, preservative free, for intramuscular use	CSL
				H1N1 Fluvirin, P-free		SEQ
				H1N1 Fluzone, P-free		PMC
90668	127		Novel Influenza-H1N1-09	H1N1 Afluria	Influenza virus vaccine, pandemic formulation, split-virus, for intramuscular use	CSL
				H1N1 Fluvirin		SEQ
				H1N1 Fluzone		PMC
90663	128		Novel Influenza-H1N1-09 all formulations		Influenza virus vaccine, pandemic formulation, H1N1	
90630	166	Influenza	Influenza, intradermal, quad, p-free	Fluzone Quad Intradermal	Influenza virus vaccine, quadrivalent (IIV4), split virus, preservative free, for intradermal use	PMC
90653	168		Influenza, trivalent, adjuvanted	Fluad	Influenza, trivalent, adjuvanted	SEQ
90654	144		Influenza, seasonal, intradermal, P-free	Fluzone Intraderm P-free	Influenza, seasonal, intradermal, preservative free	PMC
90655	140		Influenza, seasonal, P-free	Fluvirin, P-free	Influenza, seasonal, injectable, preservative free	SEQ
				Fluzone, P-free		PMC
				Fluarix, P-free		SKB
				Afluria, P-free		SEQ
				Agriflu, P-free		SEQ
				Flulaval, P-free		IDB

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
90656				Fluvirin, P-free		SEQ
				Fluzone, P-free		PMC
				Fluarix, P-free		SKB
				Afluria, P-free		SEQ
				Agriflu, P-free		SEQ
				Flulaval, P-free		IDB
90662	135		Influenza High-Dose, P-free	Fluzone High-Dose P-free	Influenza, seasonal, high dose, preservative-free	PMC
90657	141		Influenza, seasonal, injectable	Flu-Immune	Influenza, seasonal, injectable	WAL
				FluLaval		IDB
				Flu-Shield		WAL
				Fluzone		PMC
				Afluria		SEQ
				Fluvirin		SEQ
				Fluogen		PD
90658				Flu-Immune		WAL
				FluLaval		SKB
				Flu-Shield		WAL
				Fluzone		PMC
				Afluria		SEQ
				Fluvirin		SEQ
				Fluogen		PD
90660	111		Influenza, live, intranasal	FluMist	Seasonal influenza virus vaccine, live, attenuated, for intranasal use	WAL
90659	16		Influenza, Whole virus		Seasonal influenza whole virus	
90661	153		Influenza, injectable, MDCK, p-free	Flucelvax	Influenza, injectable, MDCK, p-free	SEQ
90672	149		Influenza, live, nasal, quadrivalent	FluMist Quadrivalent	Influenza virus vaccine, quadrivalent, live, for intranasal use	MED
90673	155		Influenza, recombinant, inject, p-free	Flublok	Influenza recombinant, injectable, preservative free	PSC
90674	171		Influenza, inject, MDCK, quad, p-free	Flucelvax Quadrivalent	Influenza, injectable, Madin Darby Canine Kidney, preservative free, quadrivalent	SEQ
90685	161		Influenza, inject, quad, peds, p-free	Fluzone Quad Peds, P-free	Influenza virus vaccine, quadrivalent, split virus, preservative free, when administered to children 6-35 months of age, for intramuscular use	PMC
90686	150		Influenza, inject, quadrivalent, p-free	Afluria Quad, P-free	Influenza virus vaccine, quadrivalent, split virus, preservative free, when administered to individuals 3 years of age and older, for intramuscular use	SEQ
				Fluarix Quadrivalent		SKB
				Flulaval Quad, P-free		IDB
				Fluzone Quad, P-free		PMC
90687	158		Influenza, injectable, quadrivalent	Afluria Quadrivalent	Influenza virus vaccine, quadrivalent, split virus, when administered to children 6-35 months of age, for intramuscular use	SEQ
				Flulaval Quadrivalent		IDB
				Fluzone Quadrivalent		PMC
90688				Afluria Quadrivalent	Influenza virus vaccine, quadrivalent, split virus, when administered to individuals 3 years of age and older, for intramuscular use.	SEQ
				Flulaval Quadrivalent		IDB
				Fluzone Quadrivalent		PMC
	151		Influenza, nasal, unspecified formulation		Influenza, nasal, unspecified formulation	
90724	88		Influenza, unspecified formulation		Seasonal influenza, unspecified formulation *CVX 15 has been retired by the CDC and replaced by CVX 140 and 141*	

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
					If CVX 15 is sent it will be recorded as CVX 88 Influenza, unspecified formulation	
90632	52	HepA	Hep A, adult	Havrix-Adult	Hepatitis A adult	SKB
				VAQTA-Adult		MSD
90633	83		Hep A, ped/adol, 2 dose	Havrix-Peds 2 Dose	Hepatitis A pediatric/adolescent 2 dose	SKB
				VAQTA-Peds 2 Dose		MSD
90634	84		Hep A, ped/adol, 3 dose	Havrix-Peds 3 Dose	Hepatitis A pediatric/adolescent 3 dose	SKB
						MSD
90636	104		HepA-HepB Adult	Twinrix	Hepatitis A & Hepatitis B adult	SKB
90730	85		Hep A, unspecified formulation		Hep A, unspecified formulation	
	31		Hep A-peds, unspecified formulation		Recorded as CVX 85	
	169		Hep A, live attenuated			
90636	104	HepB	HepA-HepB Adult	Twinrix	Hepatitis A & Hepatitis B adult	SKB
90723	110		DTaP-Hep B-IPV	Pediarix	DTAP-HepB-Polio combination	SKB
90731	45		Hep B, unspecified formulation		Hep B, unspecified formulation	
90739	43		Hep B, adult		Hepatitis B, adult dosage (2 dose schedule), for intramuscular use	
90740	44		Hep B, dialysis		Hep B, dialysis	
90743	43		Hep B, adult	Recombivax-Adult	Hepatitis B vaccine, adolescent (2 dose schedule), for intramuscular use	MSD
90744	08		Hep B, adolescent or pediatric	Recombivax-Peds	Hepatitis B pediatric/adolescent .5ml	MSD
				Engerix-B Peds		SKB
90745	42		Hep B, adolescent/high risk infant		Hep B, adolescent/high risk infant	
90746	43		Hep B, adult	Recombivax-Adult	Hepatitis B adult dose 1ml	MSD
				Engerix-B Adult		SKB
90747	44		Hep B, dialysis 4 dose	Recombivax-Dialysis	Hepatitis B Dialysis 4 dose	MSD
				Engerix-B dialysis		SKB
90748	51		Hib-Hep B	Comvax	HepB-Hib Combination	MSD
	132		DTaP-IPV-HIB-HEP B, historical		DTaP-IPV-HIB-HEP B, historical	
90645	47	Hib	Hib (HbOC)	HibTITER	Haemophilus influenza b HbOC 4 dose	WAL
90646	46		Hib (PRP-D)	ProHIBit	Haemophilus influenza b PRP-D booster	PMC
90647	49		Hib (PRP-OMP)	PedvaxHIB	Haemophilus influenza b OMP 3 dose	MSD
90648	48		Hib (PRP-T)	OmniHib	Haemophilus influenza b PRP-T 4 dose	PMC
				ActHib		PMC
				Hiberix		SKB
90720	22		DTP-Hib	Tetramune	DTP – Hib combination	WAL
90721	50		DTaP-Hib	TriHIBit	DTaP-Hib combination	PMC
90737	17		Hib, unspecified formulation		Hib, unspecified formulation	
90748	51		Hib-Hep B	Comvax	HepB-Hib combination	MSD
90698	120		DTaP-Hib-IPV	Pentacel	DTaP-Hib-IPV combination	PMC
90644	148		Meningococcal C/Y-Hib PRP	Menhibrix	Meningococcal C/Y-Hib PRP	SKB
	132		DTaP-IPV-HIB-HEP B, historical		DTaP-IPV-HIB-HEP B, historical	
	170		DTAP/IPV/HIB - non-US		DTAP/IPV/HIB - non-US	
90649	62	HPV	HPV, Quadrivalent	Gardasil	Human Papilloma Virus, quadrivalent	MSD
90650	118		HPV, Bivalent	Cervarix	Human Papilloma Virus, bivalent	SKB
	137		HPV, unspecified formulation		HPV, unspecified formulation	
90651	165		HPV9	Gardasil 9	Human Papillomavirus 9-valent vaccine	MSD
	160	H5N1 flu	Influenza A (H5N1), ADJUVANTED-2013	Influenza A (H5N1), ADJUVANTED-2013	Influenza A (H5N1), ADJUVANTED-2013	SKB
	123		Influenza, H5N1-1203		Influenza, H5N1-1203	IDB
90281	86	Ig	Ig	Ig	Ig human	
90283	87		IgIV	IgIV	Ig IV human	
				Flebogamma		
90287	27		Botulinum-antitoxin	Botulinum-antitoxin	Botulinum antitoxin equine	
90288			Botulism	BabyBIG	Botulism Immune Globulin	
				Botulism		
				BIG		
90291	29		CMV-IgIV	CMV-IgIV	Cytomegalovirus Ig IV human	
90741			Ig	Ig	immune globulin, unspecified formulation	

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
90296	12		Diphtheria-antitoxin	Diphtheria-antitoxin	Diphtheria antitoxin, equine, any route	
90371	30		HBIg	HBIg	Hepatitis B Ig human	
90375	34		RIg	Rig	Rabies Ig human	
90376	34		RIg-HT	HyperRAB S/D	Rabies Ig heat treated human	GRF
				Imogam Rabies - HT		PMC
				RIg-HT		
90378	93		RSV-IgIM	Synagis	Respiratory syncytial virus Ig	
90379	71		RSV-IgIV	RSV-IgIV	Respiratory syncytial virus Ig IV	
90384			Rho(D)Full	Rho(D)Full	Rho(D)Ig RhlG human full-dose	ORT
90385			Rho(D)Mini	Rho(D)Mini	Rho(D)Ig RhlG human mini-dose	
90386			Rho(D)IV	Rho(D)IV	Rho(D)Ig RhlG human IV	CSL
90389	13		TiG	BayTet	Tetanus Ig human	
				TiG		
	157		Rho(D) IG IM		Rho(D) Immune globulin - IM	
	156		Rho(D) IG		Rho(D) Immune globulin – IV or IM	
	159		Rho(D), unspecified formulation		Rho(D), unspecified formulation	
90393	79		Vaccinia immune globulin	Vaccinia-Ig	Vaccinia Ig human	
90396	36		VZIg	VZIg	Varicella-zoster Ig human	
	117		VZIG (IND)	VariZIG		CNJ
			Varicella IG			
90665	66	Lyme	Lyme	LYMErix	Lyme disease	SKB
90735	39	Encephalitis	Japanese encephalitis-SC	JE-Vax	Japanese encephalitis-Subcutaneous administration	JPN
	129		Japanese Enceph, unspecified formulation		Japanese Encephalitis vaccine, unspecified formulation	
90738	134		Japanese encephalitis-IM	Ixiaro	Japanese Encephalitis-Intramuscular administration	VAL
90705	05	Measles	Measles	Measles	Measles live 1964-1974 (Eli Lilly)	MSD
				Attenuvax	Measles live	MSD
90708	04		Measles-Rubella	M-R-VAX	Measles and rubella live	MSD
				Measles-Rubella (MERU)		MSD
90704	07	Mumps	Mumps	Mumps	Mumps 1950-1978	MSD
				Mumpsvax	Mumps live	MSD
90709			Rubella-Mumps, unspecified formulation			
	38		Rubella-Mumps	Biavax II	Rubella and mumps live	MSD
				Mumps-Rubella (MURU)		MSD
90707	03	MMR	MMR	MMR II	Measles, mumps and rubella live	MSD
90710	94		MMRV	Proquad	Measles, mumps, rubella, varicella live	MSD
90733	32	Meningo	Meningococcal MPSV4	MENOMUNE	meningococcal polysaccharide vaccine (MPSV4)	PMC
90734	114		Meningococcal MCV4P	Menactra	meningococcal polysaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4P)	PMC
	136		Meningococcal MCV4O	Menveo	meningococcal oligosaccharide (groups A, C, Y and W-135) diphtheria toxoid conjugate vaccine (MCV4O)	SKB
	147		MCV4, unspecified formulation		Meningococcal, MCV4, unspecified formulation(groups A, C, Y and W-135)	
	108		Meningococcal ACWY, unspecified		meningococcal ACWY vaccine, unspecified formulation	
90644	148		Meningococcal C/Y-Hib PRP	Menhibrix	Meningococcal C/Y-Hib PRP	SKB
	167		Meningococcal, unknown serogroups		meningococcal vaccine of unknown formulation and unknown serogroups	
90621	162	MeningB	Meningococcal B, recombinant	Trumenba	Meningococcal recombinant lipoprotein vaccine, serogroup B, 3 dose schedule, for intramuscular use Meningococcal B vaccine, fully recombinant	PFR
90620	163		Meningococcal B, OMV	BEXSERO	Meningococcal recombinant protein and outer membrane vesicle vaccine, serogroup B, 2 dose schedule, for intramuscular	SKB

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
					Meningococcal B vaccine, recombinant, OMV, adjuvanted	
	164		Meningococcal B, unspecified		Meningococcal B, unspecified formulation	
	167		Meningococcal, unknown serogroups		meningococcal vaccine of unknown formulation and unknown serogroups	
	11	Pertussis	Pertussis	Pertussis	Pertussis vaccine	
90727	23	Plague	Plague	Plague	Plague	GRE
90712	02	Polio	Polio oral	ORIMUNE	Poliovirus OPV live oral	WAL
90713	10		Polio injectable	IPOL	Poliovirus inactivated IPV	PMC
90723	110		DTaP-Hep B-IPV	Pediarix	DTAP-HepB-Polio combination	SKB
90698	120		DTaP-Hib-IPV	Pentacel	DtaP-Hib-IPV combination	PMC
90696	130		DTaP-IPV	Kinrix	DTaP-IPV combination	SKB
	89		Polio, unspecified formulation		Polio, unspecified formulation	
	170		DTAP/IPV/HIB - non-US		DTAP/IPV/HIB - non-US	
	132		DTaP-IPV-HIB-HEP B, historical		DTaP-IPV-HIB-HEP B, historical	
90732	33	Pneumo-Poly	Pneumococcal polysaccharide PPV23	PNU-IMUNE 23	Pneumococcal polysaccharide 23 valent	WAL
				Pneumovax 23		MSD
90669	100	Pneumococcal	Pneumo-conjugate	Prevnar 7	Pneumococcal conjugate polyvalent	WAL
90670	133		Pneumococcal conjugate PCV 13	Prevnar 13	Pneumococcal conjugate vaccine, 13 valent	PFR
	152		Pneumococcal Conjugate, unspecified		Pneumococcal Conjugate, unspecified formulation	
	109		Pneumococcal , unspecified formulation		Pneumococcal ,unspecified formulation	
90675	18	Rabies	Rabies, intramuscular injection	RabAvert	Rabies intramuscular	SKB
				Imovax		PMC
90676	40		Rabies, intradermal injection	Imovax ID	Rabies intradermal	PMC
90726	90		Rabies, unspecified formulation		Rabies, unspecified formulation	
90680	74	Rotavirus	Rotavirus, tetravalent	RotaShield	Rotavirus tetravalent live oral (removed on 10/16/1999)	WAL
90680	116		Rotavirus, pentavalent	RotaTeq	Rotavirus pentavalent (after 02/02/2006)	MSD
90681	119		Rotavirus, monovalent	Rotarix	Rotavirus monovalent	SKB
	122		Rotavirus, unspecified formulation		Rotavirus, unspecified formulation (between 10/16/1999 and 02/01/2006)	
90706	06	Rubella	Rubella	Rubella	Rubella live	MSD
				Meruvax II		MSD
90708	04		Measles-Rubella	Measles-Rubella (MERU)	Measles and rubella live	MSD
				M-R-VAX		MSD
90709			Rubella-Mumps, unspecified formulation		Rubella-Mumps, unspecified formulation	
	38		Rubella-Mumps	Mumps-Rubella (MURU)	Rubella and mumps live	MSD
				Biavax II		MSD
	75	Smallpox	Vaccinia (smallpox)	ACAM2000	Smallpox	PMC
				Dryvax	Vaccinia (Smallpox) dry	WAL
	105		Vaccinia (Smallpox), diluted	Vaccinia (smallpox), diluted	Vaccinia (smallpox), diluted	
	09	Td	Td (adult), absorbed	Td	Tetanus and diphtheria adult	PMC
	09					MBL
90714	113		Td (adult) preservative free	DECAVAC	Td preservative free – CPT code is effective for immunizations given on or after 7/1/2005	PMC
				TENIVAC		PMC
				Td P-free		MBL
						AKR
	138		Td (adult), not adsorbed		tetanus and diphtheria toxoids, not adsorbed, for adult use	
	139		Td (adult), unspecified formulation		Td (adult) unspecified formulation	
90715	115		TdaP > 7 Years	Adacel	TdaP > 7 years	PMC
				Boostrix		SKB
90715	115	Pertussis(Tdap)	TdaP > 7 Years	Adacel	TdaP > 7 years	PMC
				Boostrix		SKB
90703	35	Tetanus	Tetanus Toxoid, adsorbed	TT	Tetanus Toxoid, adsorbed	PMC
	112		Tetanus Toxoid, , unspecified formulation		Tetanus Toxoid, unspecified formulation	
	142		Tetanus Toxoid, not adsorbed		Tetanus Toxoid, not adsorbed	
90690	25	Typhoid	Typhoid, oral	Vivotif	Typhoid oral	PAX
90691	101		Typhoid-ViCPs	Typhim Vi	Typhoid VI capsular polysaccharide	PMC

CPT	CVX	Group	Vaccine	Trade Name	Description	MFG
90692	41		Typhoid, parenteral	Typhoid	Typhoid heat and phenol inactivated	
90693	53		Typhoid-AKD	Typhoid-AKD	Typhoid acetone-killed, dried (military)	
90714	91		Typhoid, unspecified formulation		Typhoid, unspecified formulation (after 7/1/2005, no CPT code is associated with this vaccine group)	
90710	94	Varicella	MMRV	Proquad	MMRV	MSD
90716	21		Varicella	Varivax	Varicella live	MSD
90717	37	Yellow Fever	Yellow Fever	YF-VAX	Yellow Fever live	PMC
90736	121	Zoster	Zoster (shingles), live	Zostavax	Zoster (shingles), live	MSD